JUNE 24, 1933

Railway Age

Founded In 1856

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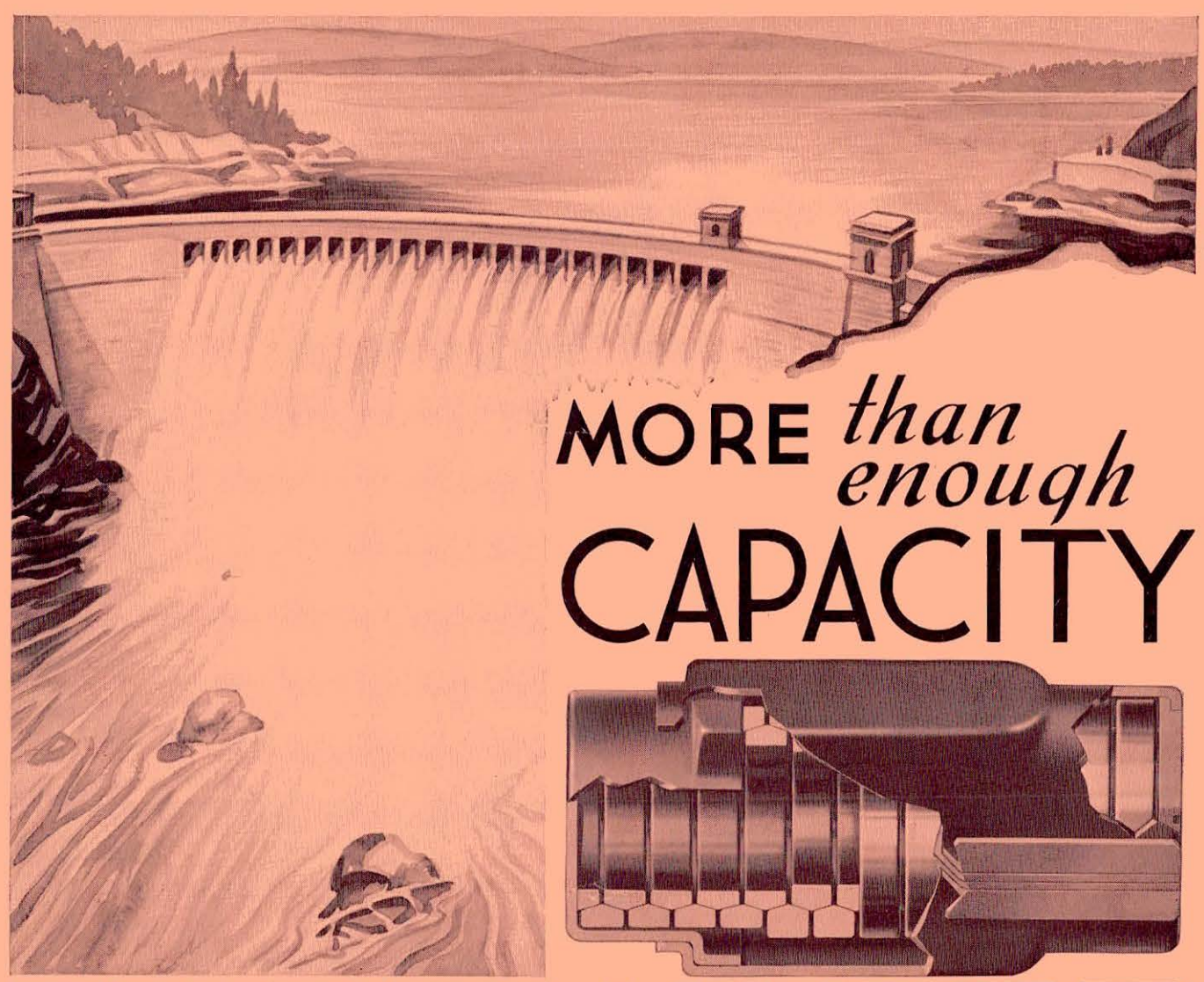
TIMELY! A Series of Twenty Articles on "Traffic Development"

WITH the marked improvement in general business and the rapid, sustained rise in car loadings, the series of *Railway Age* articles on traffic recovery, which has been in preparation for many months, appears at a particularly opportune time. The first article was published in the June 10 issue, and the second article appears in this issue.

The purpose of this series of 20 articles is to discuss and evaluate the many means and methods which will enable the railways not only to secure traffic resulting from increased business, but to recover passengers and freight which have been lost to other forms of transportation.

Other industries have successfully met competition and so can the railways. The cooperation of manufacturers will contribute materially, for new types of railway equipment which will enable the railroads to strengthen their competitive position represent a dominant factor in recovering traffic.

Today more than ever before, the railroads and the manufacturers of railway equipment constitute one huge laboratory with a united goal — the development of a service of such efficiency and excellence that railway supremacy in transportation may not only be maintained, but greatly advanced.



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RING SPRING DRAFT GEAR

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Capacity measures the cushioning power of a Draft Gear. The Edgewater B-32-K Gear has greater capacity than any other Gear fitting the standard A. R. A. pocket. It thus provides the greatest safeguard against shocks to car and lading.

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Right now there is a surplus of locomotives — true! But it seems highly probable that many roads will soon face a serious shortage of really modern power of the type required for fast-freight service.

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The high-wheel engine has the speed — and the Bethlehem Auxiliary Locomotive gives it the extra tractive force needed to start and handle trains heavy enough to utilize to the limit its tremendous high-speed hauling capacity. The value of a high-wheel engine as a revenue producer is increased by 15 to 30 per cent when it is equipped with a Bethlehem Auxiliary.

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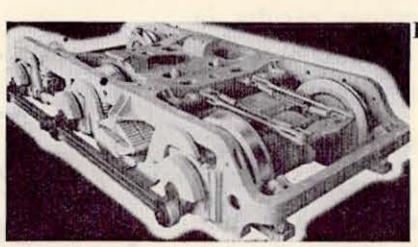

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BETHLEHEM STEEL

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With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 94 June 24, 1933 No. 25

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What Happens When Bolts Are Tight 893

Dr. A. N. Talbot presents results from tests on rail joints to determine the effects of wrenching and speeds on moments and stresses.

Joint Service Proves Satisfactory and Economical 904

An article on the pooled bus operations conducted by the Reading Transportation Company and Pennsylvania Greyhound Lines between Philadelphia, Pa., and Atlantic City, N. J.

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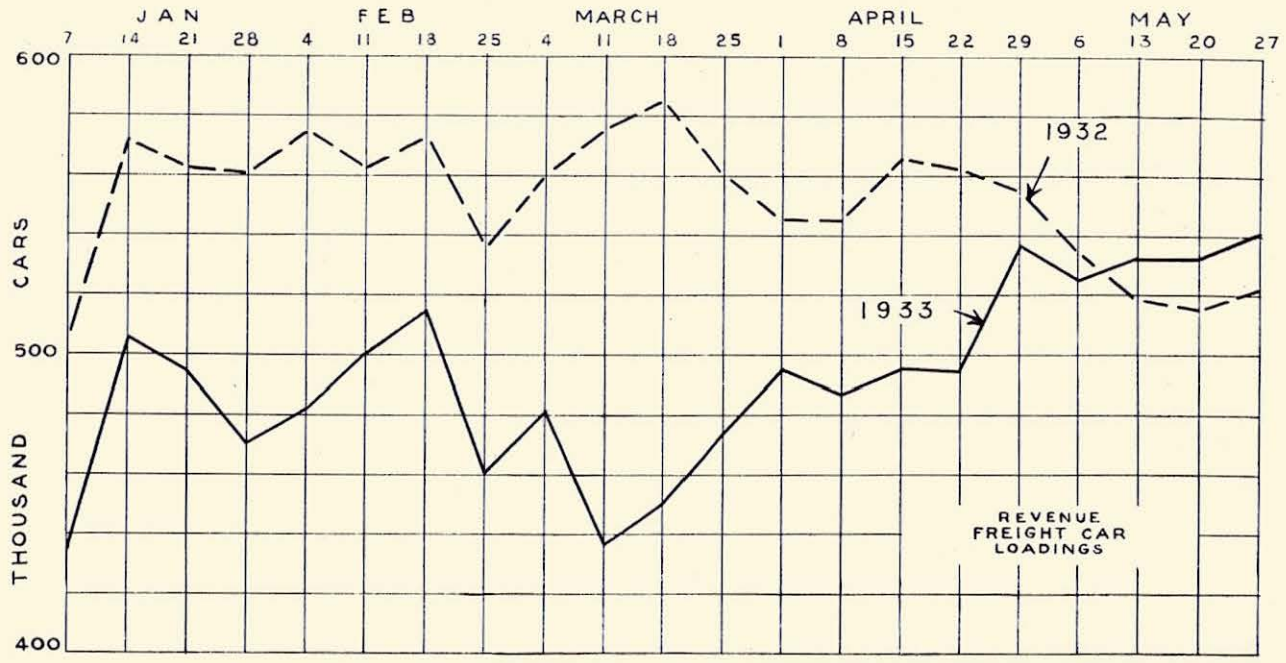


"CAR LOADINGS AND GENERAL BUSINESS BREAK THROUGH 1932 LEVELS"

Railway Age, May 27, 1933

There is encouragement in these lines and also a warning.

If increased traffic is to yield better earnings it must be handled with speed and economy.

Only modern locomotives can successfully meet these conditions.

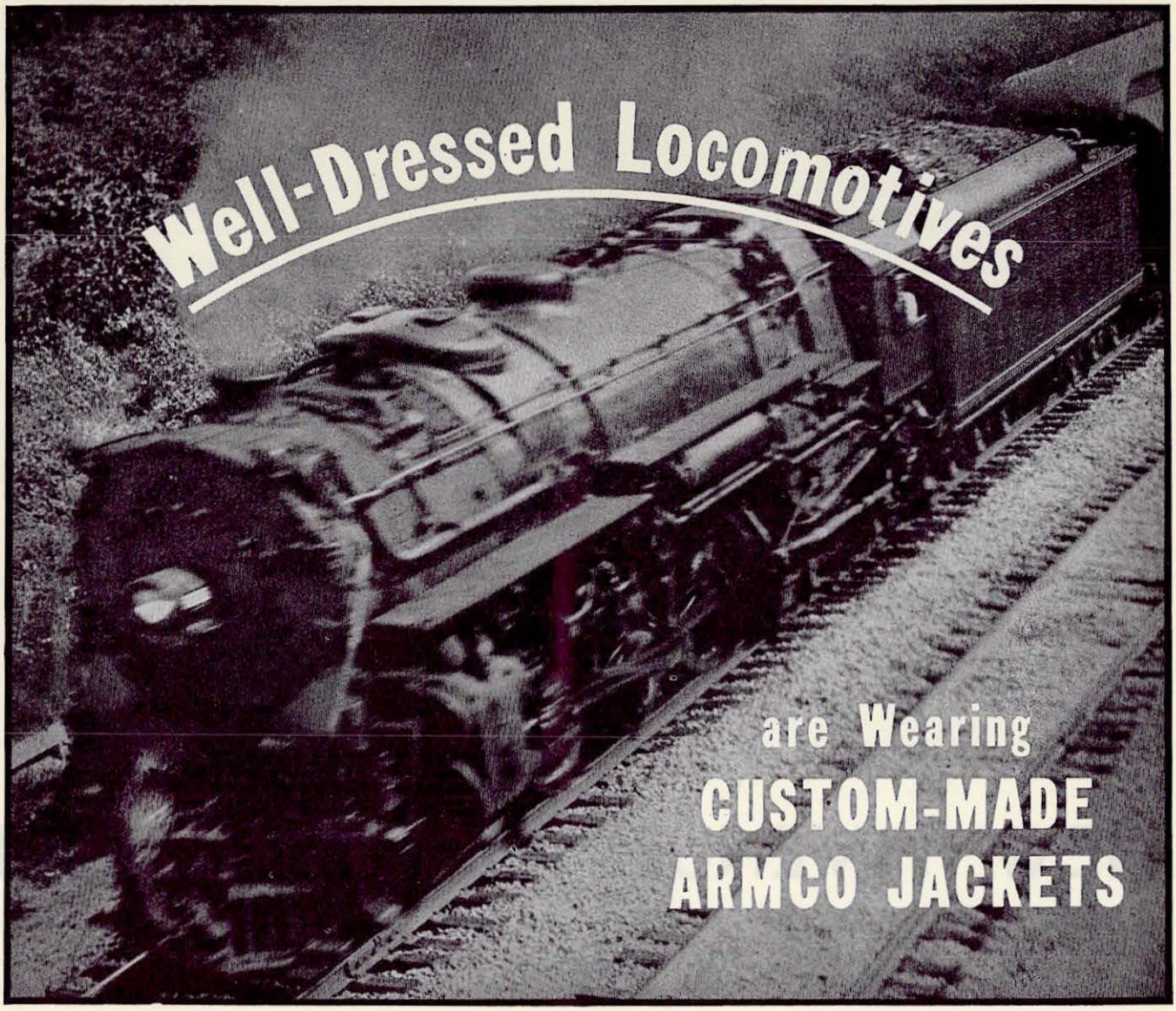
Prepare **now** by scrapping obsolete locomotives and replacing them with new power; for—

It takes Modern Locomotives to make money these days!

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA

Armco Railroad Products Illuminate "Buying Path" Ahead



WHEN your locomotives leave the round house to make their runs, they look the part if they are dressed in special Armco Jackets. They can and should be a credit to your road. Even freight and yard locomotives must look presentable. These Armco Jacket sheets with their dense, paint-holding or highly-polished surfaces, help them retain that smartly-dressed appearance. Another thing to remember is that Armco Jacket Sheets are exceptionally rust-resisting, that they actually last through more shoppings. Making your materials dollar go so far is real thrift nowadays. Why not invite us in to discuss locomotive jacket economy? Our nearest office is at your service this very day if you need it. Write for full particulars.

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for *thrifty* railroads

THE ARMCO RAILROAD SALES CO.

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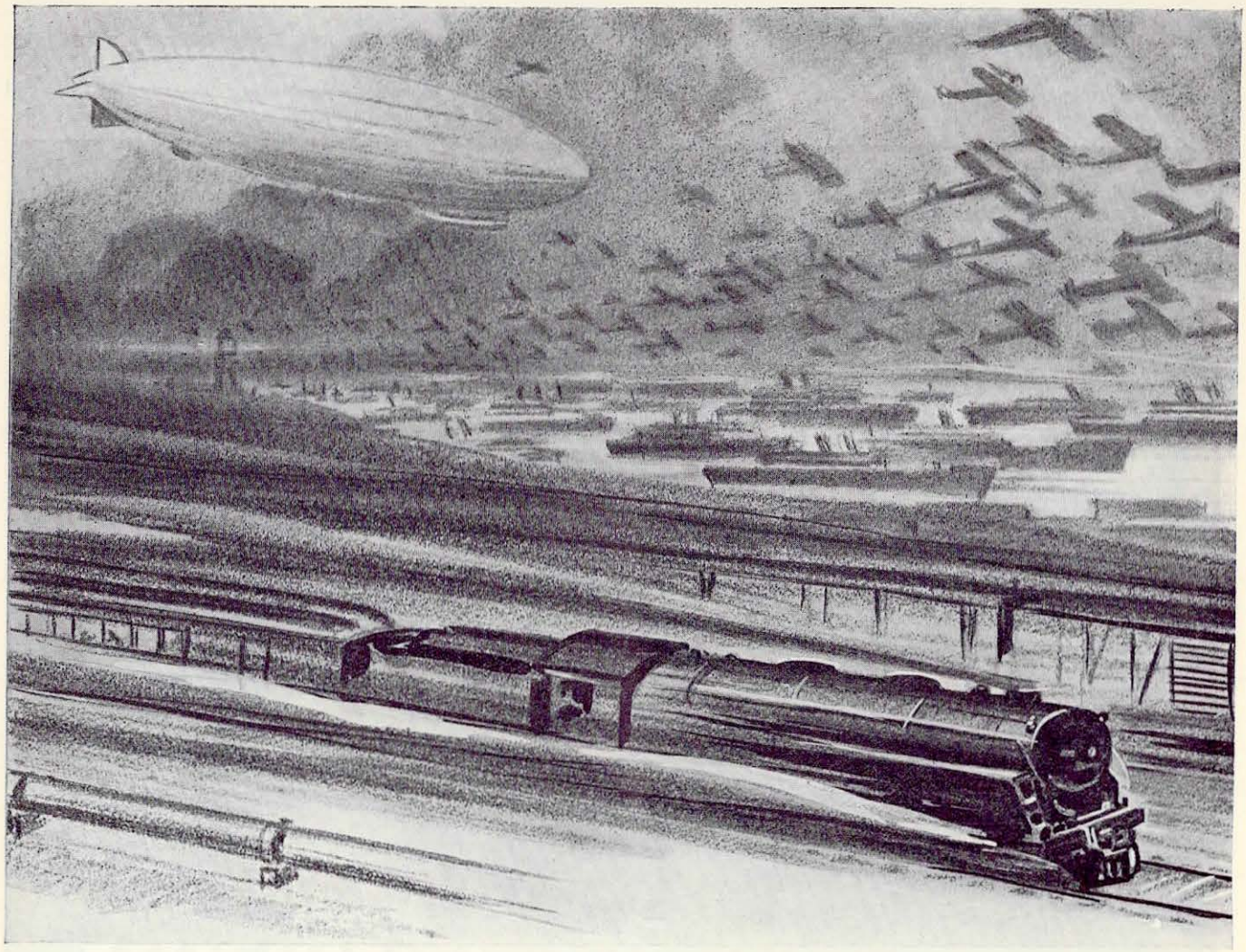

NEW AVENUES OF TRANSPORT

AMONG all new avenues of transport the oldest of them all will remain as the most essential trunk lines — the most indispensable and efficient arteries of mass transportation the world has ever known. And Standard Steel Works Company which antedates the railroads themselves will continue its indispensable function of making and supplying high duty locomotive forgings, steel wheels, tires, axles, springs, pins, rods, castings and other vital parts which give railroads longer service and lower final costs.

STANDARD STEEL WORKS COMPANY

SUBSIDIARY OF THE BALDWIN LOCOMOTIVE WORKS

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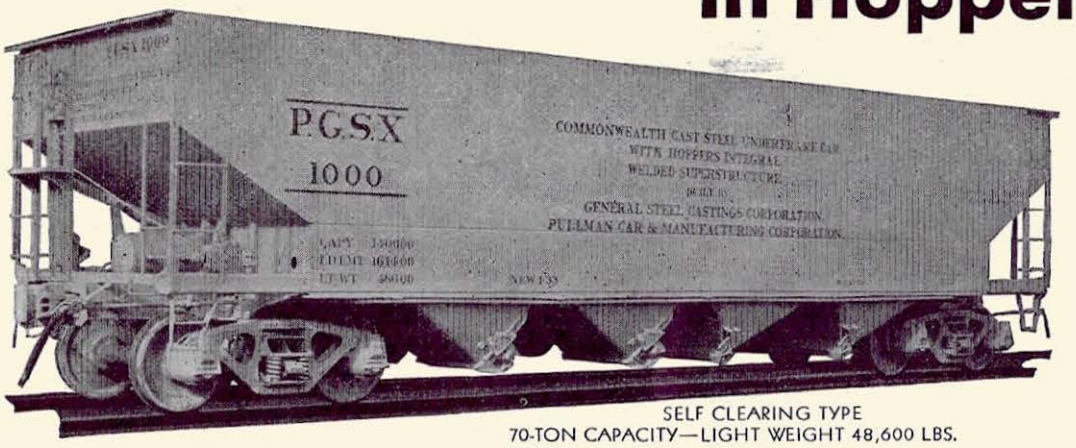
At

CENTURY OF PROGRESS

CHICAGO

Be Sure to See... The Latest Development in Hopper Cars



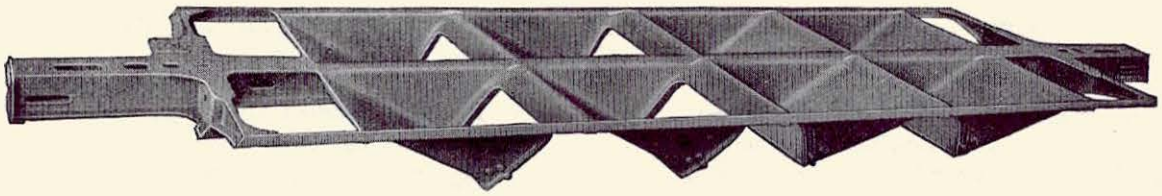
SELF CLEARING TYPE
70-TON CAPACITY—LIGHT WEIGHT 48,600 LBS.

DESIGNED AND BUILT BY PULLMAN CAR & MANUFACTURING CORPORATION

WITH

COMMONWEALTH CAST STEEL UNDERFRAME

HOPPERS CAST INTEGRAL



OPERATING AND MAINTENANCE COSTS GREATLY REDUCED BY ELIMINATING DETERIORATION CAUSED BY CORROSION, GREATER STRENGTH AND DURABILITY WITHOUT INCREASED WEIGHT

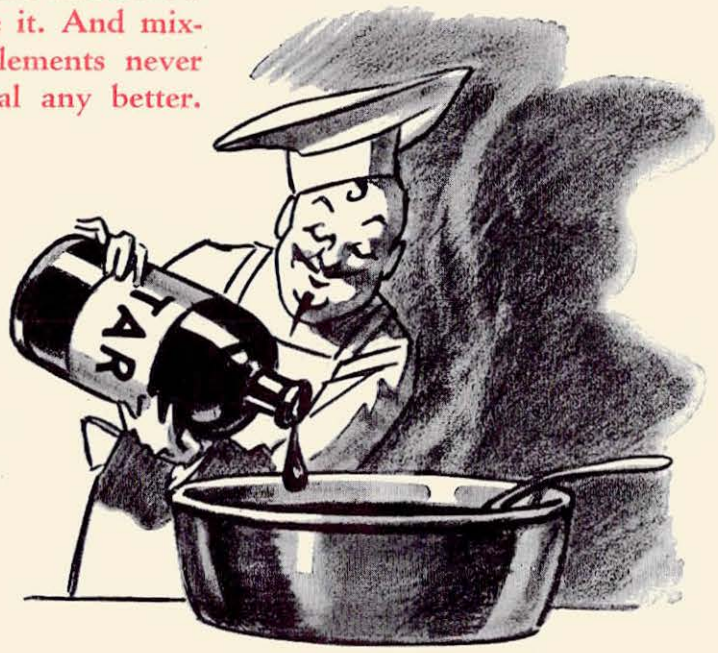
ON EXHIBITION TRACKS OUTSIDE TRANSPORTATION BUILDING

JUNE - NOVEMBER, 1933

GENERAL STEEL CASTINGS CORPORATION

EDDYSTONE, PA. COMMONWEALTH PRODUCTS GRANITE CITY, ILL.

Hash remains hash, no matter how you try to disguise it. And mixtures of foreign elements never made a poor metal any better.



When You Have A PUDDLED IRON JOB . . . Only Puddled Iron Will Do It

Mixing this or that element in metal to see what will happen may be an interesting experiment—if you don't have to pay for possible failure. But when there's a real job to be done with greatest economy, it's best *not* to take chances.

Reading Puddled Iron Pipe and Reading Puddled Iron Bars are *genuine* Puddled Iron—and nothing else. They are made of the purest materials, by time-tested methods, for Reading never compromises with quality. Reading gives you, in fullest measure, the unique resistance to vibration, the defiance of corrosion, that have kept Reading Puddled Iron famous since 1848. When you have a Puddled Iron job only Puddled Iron..READING Puddled Iron..will do it.

There is No Substitute for Puddled Iron in These Uses

- *For Roundhouse Pipe*

  When exposed to smoke or other agents of atmospheric corrosion, Reading Puddled Iron Pipe forms a hard, impervious film of iron oxide which effectively prevents destructive pitting and penetration.

- *For Locomotive Pipe*

  Safety and freedom from breakdowns demand pipe that resists BOTH corrosion and vibration. Since 1848, Reading Puddled Iron Pipe has defied these conditions as does no other pipe because of its *fibrous* structure, and the hundreds of thousands of protective siliceous filaments uniformly distributed throughout the pure iron.

- *For Stations and Other Buildings*

  Reading Puddled Iron Pipe has a *proved record* in hundreds of instances of outlasting the building in which it is installed. That means enduring economy—continuing freedom from repair and replacement costs.

- *For Drains*

  Alternating wet and dry conditions often mean swift death for most kinds of pipe. Reading galvanized Standard Puddled Iron Pipe is especially adapted to give long service under such conditions. For underground drains, Reading Galvanized Extra Heavy Puddled Iron Pipe is recommended.

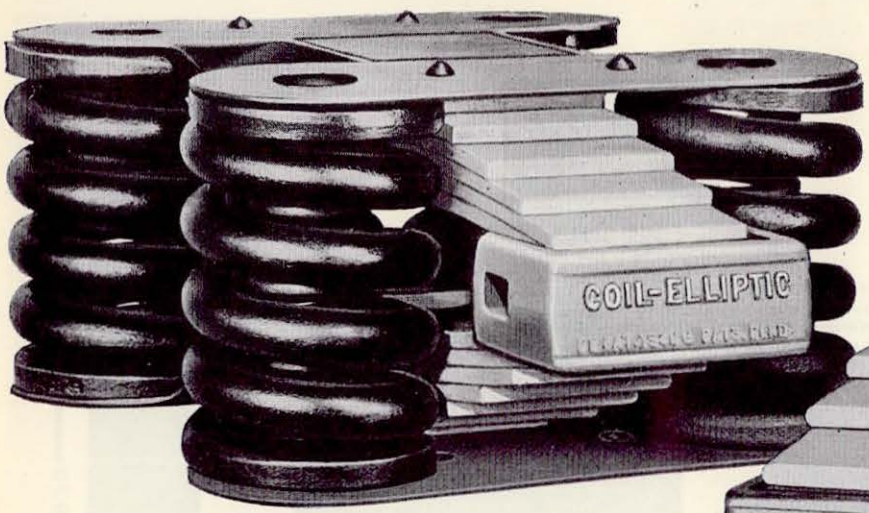
READING PUDDLED IRON

SINCE 1848

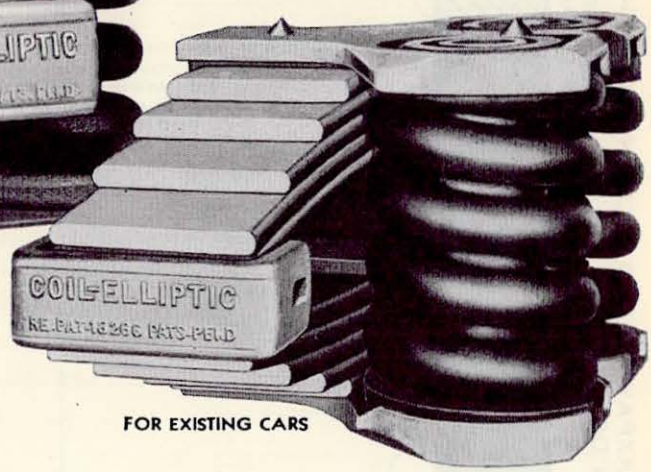
READING IRON COMPANY PHILADELPHIA

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

"COIL - ELLIPTIC" SPRING GROUPS Control The Bumps



FOR NEW CARS



FOR EXISTING CARS

Friction between the leaves of the elliptic springs counteract and soften the violent oscillations of the coil springs.

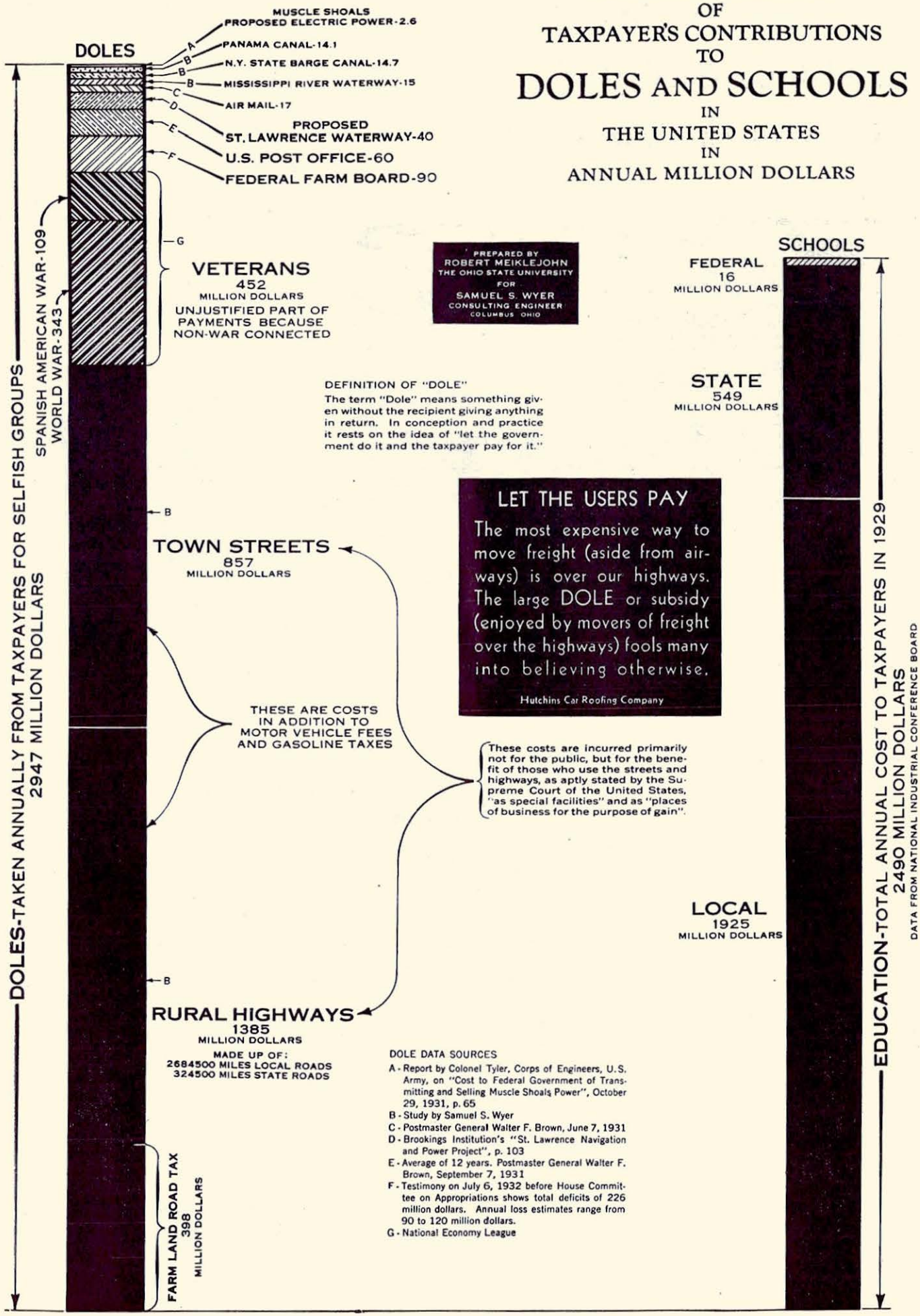
Freight cars equipped with "COIL-ELLIPTIC" spring groups are relieved from injurious vertical shocks and carry their lading safely at all speeds.

Our spring shop provided with modern facilities for the double heat treatment of springs to meet the new A. R. A. specifications, assures a quality product and a dependable source of supply.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

COMPARISON OF TAXPAYER'S CONTRIBUTIONS TO DOLES AND SCHOOLS IN THE UNITED STATES IN ANNUAL MILLION DOLLARS


DOLES
MUSCLE SHOALS PROPOSED ELECTRIC POWER-2.6
A
PANAMA CANAL-14.1
B
N.Y. STATE BARGE CANAL-14.7
B
MISSISSIPPI RIVER WATERWAY-15
C
AIR MAIL-17
D
PROPOSED ST. LAWRENCE WATERWAY-40
E
U.S. POST OFFICE-60
F
FEDERAL FARM BOARD-90
G
VETERANS
452
MILLION DOLLARS
UNJUSTIFIED PART OF PAYMENTS BECAUSE NON-WAR CONNECTED
SPANISH AMERICAN WAR-109
WORLD WAR-343
DOLES-TAKEN ANNUALLY FROM TAXPAYERS FOR SELFISH GROUPS
2947 MILLION DOLLARS
PREPARED BY
ROBERT MEIKLEJOHN
THE OHIO STATE UNIVERSITY
FOR
SAMUEL S. WYER
CONSULTING ENGINEER
COLUMBUS OHIO
DEFINITION OF "DOLE"
The term "Dole" means something given without the recipient giving anything in return. In conception and practice it rests on the idea of "let the government do it and the taxpayer pay for it."
LET THE USERS PAY
The most expensive way to move freight (aside from airways) is over our highways. The large DOLE or subsidy (enjoyed by movers of freight over the highways) fools many into believing otherwise.
Hutchins Car Roofing Company
B
TOWN STREETS
857
MILLION DOLLARS
THESE ARE COSTS IN ADDITION TO MOTOR VEHICLE FEES AND GASOLINE TAXES
These costs are incurred primarily not for the public, but for the benefit of those who use the streets and highways, as aptly stated by the Supreme Court of the United States, "as special facilities" and as "places of business for the purpose of gain".
B
RURAL HIGHWAYS
1385
MILLION DOLLARS
MADE UP OF:
2684500 MILES LOCAL ROADS
324500 MILES STATE ROADS
FARM LAND ROAD TAX
398
MILLION DOLLARS
SCHOOLS
FEDERAL
16
MILLION DOLLARS
STATE
549
MILLION DOLLARS
LOCAL
1925
MILLION DOLLARS
EDUCATION-TOTAL ANNUAL COST TO TAXPAYERS IN 1929
2490 MILLION DOLLARS
DATA FROM NATIONAL INDUSTRIAL CONFERENCE BOARD

DOLE DATA SOURCES

A - Report by Colonel Tyler, Corps of Engineers, U.S. Army, on "Cost to Federal Government of Transmitting and Selling Muscle Shoals Power", October 29, 1931, p. 65

B - Study by Samuel S. Wyer

C - Postmaster General Walter F. Brown, June 7, 1931

D - Brookings Institution's "St. Lawrence Navigation and Power Project", p. 103

E - Average of 12 years. Postmaster General Walter F. Brown, September 7, 1931

F - Testimony on July 6, 1932 before House Committee on Appropriations shows total deficits of 226 million dollars. Annual loss estimates range from 90 to 120 million dollars.

G - National Economy League

The "New Deal" Becomes a Reality

The "new deal" in the economic affairs of the United States began when Congress adjourned last week. The legislation passed in accordance with President Roosevelt's program authorizes, and even requires, far closer co-operation between concerns in the same industry, and gives the federal government more supervision and control over every important form of industry and commerce, than ever existed before in this country in time of peace. The "planned" economic society, the advocates of which until a short time ago were regarded as idealists and theorists, has become a reality.

"Practical" men have won the release from the rigors of the anti-trust law which they long have sought, but by legislation at which many of them stand aghast because it is designed so much more to increase the participation of government and organized labor in business than to increase the profits of business. Trade associations are authorized to adopt codes of fair competition, but they must be approved, and violators of them may be punished, by government, and the employees of the industries affected must be allowed to be heard regarding matters concerning them by representatives of their own choosing. A federal co-ordinator of transportation has been created to eliminate preventable wastes on the railways. Thus government control of railway operation has been made more extensive and detailed than it ever has been excepting under actual government operation; and the first act of the co-ordinator has been, on the initiative of the President himself, to intervene unofficially in a railway wage dispute that is nation-wide and involves all railways and all their employees. The industry of the country may find the government supervision applied to it more irksome than the railroads will find the additional control applied to them, because industry is not so used to having the government tell it what it can and cannot do, and, especially, to being obliged to deal with labor on terms laid down by the government.

The Improvement in Business

While the "new deal" is the hugest experiment in economics ever undertaken, its purpose, and even the theory underlying it, are not open to much criticism. The nation has been passing through, and is still in, the worst period of depression in all history. As business leadership did little or nothing to prevent the catastrophe, and long seemed unable to remedy its effects, criticism by business leaders of the government for stepping in and adopting heroic measures to deal with the situation would be unjust. It is, however, seriously questionable whether the heroic measures adopted were not ceasing to be needed and what effects they will produce.

As the *Railway Age* repeatedly has pointed out, the downward trend of business was succeeded last September by an upward trend which was only interrupted by the banking moratorium, and which has sharply accelerated since then. The upward trend of railroad freight carloadings, which became evident ten months ago, finally caused loadings in May, 1933, to exceed those of May, 1932, by 2 per cent, and loadings in the two weeks ended on June 10 to exceed loadings in the corresponding weeks of 1932 by 13 per cent. The trend of railroad freight business recently has been

Loadings of Freight Cars

	Two weeks ended June 10, 1933	Two weeks ended June 10, 1932	Increase or Decrease	Per cent Increase or Decrease
Grain and Grain Products...	70,121	47,926	+22,195	+46.3
Live Stock	30,934	29,610	+1,324	+4.5
Coal	166,576	129,927	+36,649	+28.2
Coke	9,031	5,658	+3,373	+59.6
Forest Products	47,135	33,493	+13,642	+40.7
Ore	18,490	5,326	+13,164	+247.2
Miscellaneous	414,505	365,542	+48,963	+13.4
TOTAL CARLOAD FREIGHT	756,792	617,482	+139,310	+22.6
Merchandise—L. C. L.....	315,988	331,665	−15,677	−4.7
TOTAL ALL FREIGHT..	1,072,780	949,147	+123,633	+13.0

even more favorable than these figures indicate, because, while in the first two weeks of June loadings of less than carload freight were 4.7 per cent less than last year, loadings of carload freight were almost 23 per cent greater. The increases in the loadings of the various classes of commodities in the two weeks ended on June 10 over the loadings in the corresponding part of last year, as shown in an accompanying table, ranged from as low as 4½ per cent for live stock to 28 per cent for coal, 41 per cent for forest products, 46 per cent for grain and 247 per cent for ore.

An improvement in general business having been under way for some months, it is impossible to say whether the recent acceleration of the improvement would have occurred, anyway, or has been caused by the administration's economic program, especially its program of inflation, and still more impossible to anticipate the future effects of its program. That its projected large expenditures upon public works will increase already excessive taxes is as certain as that those portions of its program which have already had the best effects upon business have been the safeguards under which it reopened the banks and its economy and beer legislation. As to the parts of its program embodied in more recent legislation, all that can be said

at present is that they are novel to the point of being revolutionary, and that their success will depend largely upon the way in which the new legislation is administered, and especially upon the success attained in preventing its economic purposes from being vitiated by political influences.

Railroad Co-ordination and Mr. Eastman

The original project for railroad co-ordination was intended to effect all the economies practicable by eliminating duplications of service and facilities. Certain provisions appearing in the legislation as finally enacted would make effecting of most of the economies contemplated impracticable excepting for the increase in traffic that is occurring, and will interfere seriously with the effecting of many economies in spite of the increase of traffic. In 1932 wages were over 63 per cent of railway operating expenses, and it is extremely difficult to effect savings in materials and fuel without at the same time reducing the labor employed in using them. Nevertheless, the labor organizations succeeded in securing adoption of provisions that the administration of the new law shall not cause the number of employees to be reduced over 5 per cent less than it was in May, 1933, or cause a reduction in the compensation of any employee.

"So far as the immediate or early accomplishment of important economies is concerned," says Joseph B. Eastman, who has been appointed co-ordinator, "the restrictions of the act with respect to reduction in the number and compensation of railroad employees will probably constitute serious obstacles." An increase in traffic such as is occurring normally causes an increase in employment, however, and the provisions mentioned will at least not prevent curtailments of service which will effect economies by preventing part of the increase in the number of employees that the increase in traffic otherwise would normally cause.

The economic philosophy and policies of Commissioner Eastman, who has become federal co-ordinator, repeatedly have been discussed and criticised in these columns. He has been an advocate of government ownership, and the *Railway Age* has questioned whether an advocate of government ownership was qualified to participate fairly and constructively in the administration of the Transportation Act, which was passed to restore and contribute toward the success of private management. The *Railway Age,* like all who have followed his career, has conceded, however, that Mr. Eastman is one of the strongest men in government service. In an editorial published on November 21, 1931, in which views favorable to government ownership that he had expressed were criticised, the *Railway Age* said, "Mr. Eastman's ability, industry, intelligence, sincerity and courage make him the dominant member of the Interstate Commerce Commission," and that this paper had "more admiration for Mr. Eastman than it has ever had for any other member of the commission." He has been the principal critic of the railways for following competitive practices, which, in his opinion, have both reduced their earnings and increased their expenses. Probably no railway executive would have been acceptable to his own colleagues, as federal co-ordinator, or would have been willing to take the position, if for no other reason than that it would have been so difficult for any railway officer to have performed the duties of co-ordinator without being suspected, as experience under government operation showed, of intentionally or unintentionally favoring the railway system with which he had been connected.

Solution of Railroad Problem Only Begun

Considering his unquestionable ability, sincerity, and courage, the knowledge he has acquired by fourteen years of observation and experience as a member of the Interstate Commerce Commission, and the confidence reposed in him by the more aggressive proponents of a "planned" industry, Mr. Eastman became the natural, and even inevitable, selection for federal co-ordinator, if he would accept the position. Furthermore, recent testimony given by him before committees of Congress indicated very clearly that he realized that the problems of satisfactory co-ordination could not be easily solved, and that he had no exaggerated ideas as to what could be accomplished by the mere expedient of passing new federal legislation to reduce railroad service or even to effect huge regional consolidations.

The railroads are required to create regional co-ordinating committees to effect economies subject to the approval of the federal co-ordinator, who may, however, act on his own initiative when a regional committee fails to function satisfactorily.

Progress toward the solution of the railroad problem obviously can be only begun under the co-ordinator law. As Mr. Eastman has said, it "does not pretend to be a complete or final answer to the transportation problem of the United States," but "is a temporary and preliminary measure which is designed to pave the way to a comprehensive treatment of the transportation situation of a more permanent and enduring character," and the co-ordinator has the "very important duty of carrying on research and study for the purpose of recommending to the President and to the Congress such further legislation, covering all phases of the situation, as may be necessary and practicable to place the transportation agencies of the country on a strong and stable basis and in a position to provide the facilities which the commerce and industry of the nation require." Equipped with the information he already has, and the additional information he will acquire by his study and experience as co-ordinator, Mr. Eastman will have the greatest opportunity to make a real contribution to the solution of the country's transportation problem that any man has ever had.

The "new deal" has been begun, and there is only one rational course for business men in general, and railroad men in particular, to follow in the near future. This is, to accept the new legislation in a friendly spirit and do all they can to make it operate for the best interests of all industries and classes. Probably the

shortsighted selfishness that was responsible for reckless competitive practices in the railroad and other industries, and that prompted many industries and classes to make every effort to use the taxing and regulating powers of government for their own benefit regardless of the effects upon other industries and classes, was the principal cause of the great economic catastrophe which has resulted in such enormous losses and suffering to all industries and classes.

The purpose of the "new deal" is to cause competing concerns in each industry, and all industries and all classes of the people, to so co-operate as to restore prosperity and find ways of preventing similar catastrophes in future. The large expenditures upon public works, and the great increase in government supervision of business provided for by the new legislation, are not in accordance with the *Railway Age's* views regarding sound economic or government policies. Neither, however, have been the government policies which business men, in their supposed self-interest, have caused to be applied to transportation, but it has been necessary for railway officers to accept these policies and do the best they could under them.

Failure of the heads of large companies to adopt a policy of constructive leadership, in the interest of the nation as a whole, both during the recent period of prosperity and the more recent period of depression, is largely or mainly responsible for leaders in public affairs imposing the "new deal" upon business. Perhaps the "new deal" will work more successfully than many now anticipate. Perhaps, whatever its success or failure, it will teach business leaders to consider less in future what they may be able to get for their own concerns or industries by shortsighted and selfish policies, and to consider more the much greater amount they can accomplish for their own concerns and industries and for the American public by following policies predicated upon the assumption that what is best for the nation will ultimately be best for all classes of its people, and for all industries that are entitled to prosper because of and in proportion to, the contribution they make to the general welfare.

Highway Robbery

Dr. C. S. Duncan, economist for the Association of Railway Executives, probed the source of much of our muddled national economy in his recent address before the Associated Traffic Clubs at Peoria. This source is the rapid extension of government into the realm of private industry without adopting the accounting methods and self-support of private industry—resulting in a confusion in making comparisons which only a trained scholar can dissolve.

"A substantial part of the cost of an operation by the government," he said, "is not paid by those directly served but by all the people through taxes. Public property is not taxed and pays no interest; is never amortized. As the government extends its functions into private enterprise on this basis, socializing important elements of cost through taxes and deriving no revenues for the support of government from its own property, it thus narrows the basis of private property which must serve as the source of government and, therefore, the rate of tax must rise."

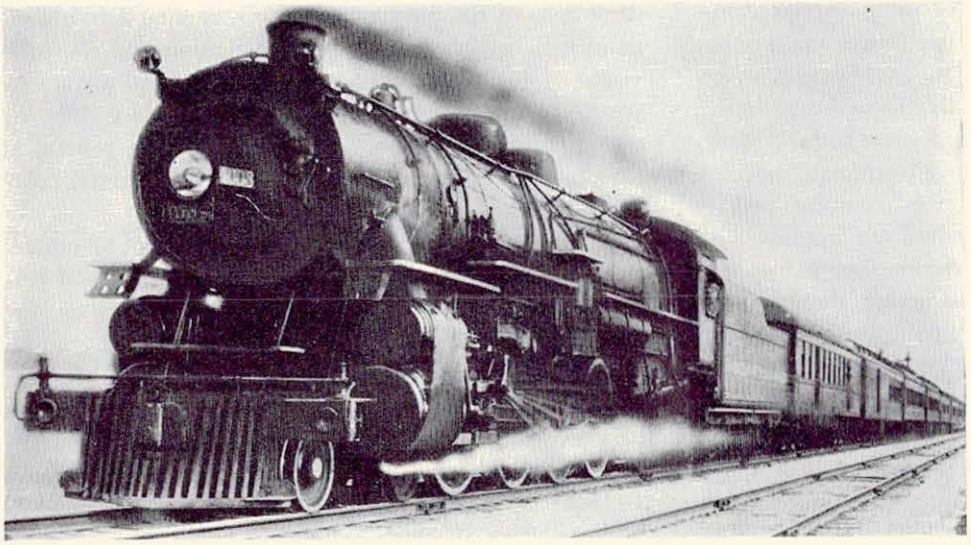
In making this observation, Dr. Duncan had in mind, primarily, highway transportation, which is, of course, provided in large measure at the expense of general taxpayers rather than at that of the users. His view holds true with equal force, however, in other incursions of the government into economic activities—municipal lighting and water distribution and the provision of facilities for free use by water and air transport. The private industries whose fields are thus invaded naturally protest, but the citizenry in general is usually not greatly concerned at such complaints, however just they may be.

It is, on the other hand, difficult indeed to understand the complacency with which developments of this nature are viewed by the larger taxpayers, such as, for instance, great corporations employing skilled counsel who certainly should be able to discern the threat to all private property in the constantly decreasing tax basis which heavy capital investments by the government bring about. For example, in the eight years 1923-30 rural highway expenditures totaled some 12 billion dollars of which, roughly, 8 billion was a charge to general taxpayers and 4 billion to highway users. The highway program not only burdened general taxpayers directly to the extent of 8 billions but it led to the diversion of 12 billions from private expenditure, where it would have continued to yield taxes, to the government which immediately sterilized it as a further producer of public revenue.

Supposing road expenditures in 1923-30 had been restricted to highways designed for normal sized vehicles and that the outlay had thus been reduced from the 12 billion actually spent to 4 billion, which would have been covered by fees from road users. General taxpayers would, under such circumstances, have not only saved 8 billions but much of this sum would have been diverted into private channels of investment where it would continue to yield taxes.

There is strong reason to believe that road expenditures could be kept within the total of receipts from road users if oversized vehicles were banned and road construction and maintenance costs limited to the requirements of normal sized vehicles. Samuel S. Wyer, consulting engineer of Columbus, Ohio, in a recent radio address under the auspices of the American Taxpayers League said that over one-half of the farmers' property tax burden is due to rural highway costs. Since the added costs, over and above receipts from road users, are due almost entirely to added construction and maintenance outlays necessary for heavy vehicles, cannot it with justice be said that farmers, home-owners, and other taxpayers, are victims of robbery, to wit, highway robbery?

Will Reductions in Rates Attract More Passenger Traffic?



Railroads of the United States Offer the Best Transportation Service in the World

Eastern lines are opposed to lowering the basic rate while western roads favor a reduction

THE most perplexing problem confronting passenger traffic officers today is that of determining whether the basic rate of 3.6 cents per mile should be continued, or whether it should be reduced, and if so, to what amount. As in any enterprise involving widespread merchandising, price is an important factor in the sale of railroad passenger service. However, unlike the price of most other articles, railroad passenger rates have not moved in accordance with supply and demand or economic conditions. Thus, prior to the war, passenger rates were not standard on all railroads and ranged between 2 cents and 3 cents per mile. After the war they were increased to a uniform level of 3.6 cents per mile but since 1920, although various economic factors, climaxed by the depression, have exerted marked influence on passenger travel, the basic rate has continued at 3.6 cents per mile. As a result of these various factors, railroad passenger travel has declined greatly as shown in the accompanying table.

The failure of the railroad to change the basic passenger rate is the result of a difference of opinion among their managements as to the effect of a lower rate, and to the fact that if the rate is once reduced, and the results are not successful, it will be exceedingly difficult to increase it. The railroads most strongly opposed to a change are to be found in the East, which district earns over 56 per cent of the passenger revenues and handles more than 72 per cent of the passengers. On the other hand, approximately 90 per cent of the individual railroads of the country favor a lower rate. In addition, the railroads that do not favor a reduction in the basic rate are the most active in the use of special reduced rates.

The lines opposed to any decrease maintain that a general reduction in the basic fare will not attract sufficient traffic back to the railroads to offset the loss in revenue; that there is no basis for assuming that in the present depression or even under more normal conditions, the carriers could develop anywhere near the required additional traffic, or handle it if they secured it, without greatly increasing their operating expenses; that

Railroad Passenger Traffic Since 1910

Year Ended	Passenger revenue Thousands	Passengers carried Thousands	Passenger-miles Thousands
June 30, 1910	$628,992	971,683	32,338,496
June 30, 1911	657,638	997,410	33,201,694
June 30, 1912	660,373	1,004,081	33,132,355
June 30, 1913	695,988	1,043,603	34,672,685
June 30, 1914	703,484	1,063,249	35,357,221
June 30, 1915	646,475	985,676	32,474,923
June 30, 1916	689,627	1,015,338	34,309,394
Dec. 31, 1916	722,359	1,048,987	35,220,016
Dec. 31, 1917	840,910	1,109,943	40,099,758
Dec. 31, 1918	1,046,166	1,122,963	43,212,458
Dec. 31, 1919	1,193,431	1,211,022	46,838,166
Dec. 31, 1920	1,304,815	1,269,913	47,369,906
Dec. 31, 1921	1,166,252	1,061,131	37,705,737
Dec. 31, 1922	1,087,516	989,509	35,811,046
Dec. 31, 1923	1,158,925	1,008,538	38,294,178
Dec. 31, 1924	1,085,672	950,459	36,368,290
Dec. 31, 1925	1,064,806	901,963	36,166,973
Dec. 31, 1926	1,049,210	874,589	35,672,729
Dec. 31, 1927	980,528	840,030	33,797,754
Dec. 31, 1928	905,271	798,476	31,717,566
Dec. 31, 1929	875,929	786,432	31,164,739
Dec. 31, 1930	730,766	707,987	26,875,642
Dec. 31, 1931	551,726	599,227	21,933,345
Dec. 31, 1932	376,584	478,738	16,974,591

The first or introductory article of this series appeared in the *Railway Age* of June 10, page 820.

. . . in passenger traffic prior to the depression was not due to the fact that people could not afford to travel; and that a reduction in the basic rate would penalize the railways in the eastern district.

The importance of traffic distribution in the consideration of a general reduction in the basic passenger rate is indicated by an analysis of passenger traffic statistics, which shows that in 1931, when all the railroads of the United States carried 209,990,000 revenue passengers, exclusive of commutation traffic, the lines in the eastern district handled 72.69 per cent, those of the southern district 7.87 per cent and those of the western district 19.43 per cent. The New York Central System, the New York, New Haven & Hartford, the Pennsylvania and the Long Island alone handled 47.64 per cent. Likewise, the 1931 passenger revenues of $486,251,576 were divided as follows: Eastern district, 56.45 per cent; southern district, 10.99 per cent; and western district, 32.57 per cent. Of the revenue passenger-miles, totaling 15,880,849,000 in 1931, 52.26 per cent were in the eastern district, 10.84 per cent in the southern district and 36.91 per cent in the western district. The average journey per revenue passenger in 1931 was 54.4 miles in the eastern district, 104.1 miles in the southern district, 143.6 miles in the western district and 75.6 miles for the United States as a whole. The revenue earned per passenger-mile was 3.307 cents in the eastern district, 3.105 in the southern district, 2.702 in the western district and 3.062 for the United States.

Opponents of a reduction in the basic passenger rate contend that any reduction in gross passenger revenue is equally a reduction in net railway income. For example, a 3-cent rate means a 16.67 per cent reduction in revenues, a 2.5-cent rate a 30.56 per cent reduction and a 2-cent rate a 44.44 per cent reduction. Opponents contend also that the necessary increase in travel to offset the fare reduction could not be handled without additional expense, which would thus bring about a reduction in net railway operating income.

The impossibility of securing the necessary increase in passengers is shown by opponents by using the New York Central System, the New York, New Haven & Hartford, the Pennsylvania and the Long Island as an example.

If these four railroads should adopt a 2-cent rate, they would have to carry 180,081,051 passengers per year, based on 1931 traffic, whereas the largest number of passengers ever carried by these railroads, 187,526,652 in 1923, had decreased to 140,558,899 in 1929, 120,557,005 in 1930 and 100,045,034 in 1931. If they establish a 2.5-cent rate, they will have to carry 144,064,848 passengers a year, and if they use a 3-cent rate, 120,054,041 passengers a year, in order to offset the loss in revenues.

The possibility of securing the necessary revenue is also remote, the eastern roads contend. The average gross passenger revenue of these four carriers for the five years ending with 1931 was $277,328,385. Even if these roads again produced the same number of passenger-miles or a sufficient number of passengers to account for that revenue, under a two-cent basic rate, they would require an increase of 80 per cent over the five-year period.

To secure the same gross passenger revenue would mean an increase of approximately 530,179,542 passengers and about 31,153,209,000 passenger-miles for the five-year period, or about 106,035,909 passengers and about 6,230,642,000 passenger-miles per year. The total number of passengers would have to be increased to about 238,580,795 and the total number of passenger-miles about 14,018,944,000 per year. The maximum number of revenue passengers carried and the maximum number of revenue passenger-miles operated by these railroads occurred in 1923, when the totals were 187,526,652 passengers and 9,632,206,000 passenger-miles.

Another consideration advanced by opponents of a fare reduction is that if the basic fare were lowered, the carriers would have no assurance of being able to secure any of the business which is now being taken from them by other forms of transportation, particularly motor coaches and air lines. Until all forms of transportation are regulated to the same extent, they contend, the rail carriers are open to attack since railroad fares form the standard below which competitive agencies of transportation fix their fares to secure business.

With a few exceptions, the railroads favoring a reduction of the basic passenger rate do not contend that traffic will be stimulated to any extent comparable with the resulting loss in revenue. They contend, rather, that the passenger business of their lines will continue to decline and that if the decline is at the same rate as that which occurred during the prosperous years of 1928 and 1929, this business will be entirely lost within 33 years. On this basis, they argue that the loss in revenues that will occur with the present rate of decline will more than exceed that which might result from a reduction in the basic rate, since the lower rate will stimulate some business at least. It is the viewpoint of many of the railroads, particularly in the West where lines with 84 per cent of the mileage favor a reduction in the basic rate, that the paramount problem is to stop the decline in passenger traffic if the railroads are to continue in the passenger business. They are of the opinion, based on experiments with low rates, that a reduction in the basic rate will arrest the decline.

This view was expressed by President W. R. Cole of the Louisville & Nashville when that road reduced the rate to two cents a mile on April 1 of this year, at which time Mr. Cole said: "It is a well-known fact that for several years the railroads have experienced a continuous decline in passenger revenues. We have encountered one form of competition after another. We have realized that changing conditions call for changes in our operations. Various methods for solving the problem have been presented, but we have agreed upon the reduction of fares as the most practicable solution. At the end of the six-month period in which the rates are in effect, the justification of the reduced rates must be judged by the results, but it is our hope and expectation that the two-cent rate will bring back lost traffic to such a degree that its continuance will be justified."

That the question of reducing the basic rate involves

In the Issue of July 8

The results of the many fares and excursion inducements offered during the past few years will be described in an article which will appear in the *Railway Age* of July 8. Both satisfactory and unsatisfactory results will be given and in each case an attempt will be made to explain why the reductions have succeeded or failed in accomplishing their purpose.

more than the problem of creating business, particularly in the western territory, is shown by the trend of passenger revenues in this territory, as indicated by a study of the revenues of seven railroads, the Chicago, Milwaukee, St. Paul & Pacific; the Chicago, Burlington & Quincy; the Chicago & North Western; the Great Northern, the Northern Pacific; the Chicago, Rock Island & Pacific and the Chicago Great Western, during the first three months of 1933, when their revenues decreased from 34.5 per cent to 54 per cent, as compared with the same months of 1932. For all Class I carriers in this territory in the months of December, 1930, and January, 1931, the passenger revenues totaled $33,156,335, while in the same months a year later they were only $23,168,630, and two years later only $15,787,774.

Private Automobile a Factor

One of the most baffling angles of the passenger problem is the private automobile. This drain is amplified in the western territory by travel bureaus which encourage share-expense travel by securing passengers for private automobile owners. Experiments in some areas show that there is a rate at which private automobile business can be regained for the railways. The Chicago & North Western, for example, found that a cent-a-mile rate, which they put into effect in Iowa, led people in the rural districts to drive their automobiles to their stations and then to use the trains to the commercial centers. Between Sioux City and Carroll, 122 miles, passenger revenues between April 1 and May 31 increased 25 per cent, while the number of passengers handled increased from 51 to 273 per cent.

Another important factor which the western railroads contend should be considered in the lowering of the basic passenger rate is the present disorganized practice of making rates. At present, the railroads are granting reduced rates for parties almost promiscuously and while an attempt is made to so fix the rates as to compete with motor coach competition, the final rates placed in effect by the railroads are often ridiculously low. For example, in a recent dispute over the fixing of a rate for a meeting at Omaha, Neb., the traffic finally moved on a round-trip rate of $10 from Chicago, a total mileage of 974. The western railroads argue that if a lower basic rate prevailed, it would not be necessary to reduce the rate for every request that is presented and that the lower rate will eliminate cut-throat rates and consequently increase the revenues from excursions.

Proponents of a lower basic rate also maintain that the western railroads can handle twice the volume of business carried in the last few years without increasing operating expense. This is substantiated by the fact that in 1932 the passengers carried by one western railroad averaged only 9 per car operated, while on another railroad one transcontinental train operating out of Chicago carried only 7 passengers per trip during March. Still another transcontinental train averaged 40 passengers in January, 35 in February and 27 in March.

What Shall New Rate Be?

The opinions of the western railroads as to the extent to which the basic rate should be reduced varies. A questionnaire sent to 27 western roads to determine their position on passenger fare reductions shows that only two oppose such action. Those opposing a reduction embrace a mileage of 15,427, or 14.17 per cent, and those favoring a reduction operate 92,114 miles of lines, or 84.63 per cent of the mileage covered by the survey, while in addition, two roads, whose mileage is 1,298, or 1.19 per cent of the total, expressed no opinion. A three-cent-per-mile sleeping and parlor car rate is favored by eight railroads, with 49.56 [illegible] mileage, one of which favors this rate only when conditions improve and another as an experiment for one year. One road, with 0.10 per cent of the mileage, favors a rate of 2.75 cents; four, with 9.18 per cent of the mileage, favor a 2.5-cent rate; five, with 3 per cent of the mileage, favor a 2-cent rate; one, with 2.93 per cent of the mileage, advocates a 1.5-cent rate; and six, with 20.62 per cent of the mileage, expressed no opinion. Fifteen railroads favor the discontinuance of the Pullman surcharge; three favor its retention; five favor a reduction and four expressed no opinion.

The vote on coach rates showed that three roads, with 21.73 per cent of the mileage, favor 3 cents per mile; one, with 0.10 per cent of the mileage, favors a 2.75-cent rate; six, with 28.59 per cent of the mileage, favor a 2.5-cent rate; eleven, with 17.96 per cent of the mileage, a 2-cent rate; one, with 2.93 per cent of the mileage, a 1.5-cent rate; and five, with 20.28 per cent of the mileage, expressed no opinion. In addition, 9 roads favor the same rate in sleeping cars and coaches, 13 roads favor lower rates in coaches than in sleeping cars and 1 favors lower fares in coaches for long hauls.

While the reduction of the basic rate is one of the most difficult problems confronting the railways, it is interesting to note that the numerous special fares that are now in effect throughout the country in reality constitute a reduction in the basic rate. This is reflected in the revenue per passenger per mile which on one large eastern railroad was 2.168 cents in 1932, and on one western railroad only 1.809 cents. The special fares which are in effect throughout the country, numbering in the hundreds, include excursion fares at ½, 1½ and 2 cents a mile, mileage books at 2.7 cents a mile, week-end fares at one fare plus 25 cents, coach fares at 1, 1½ and 2 cents a mile, special party fares at less than 1 cent a mile, convention fares, summer and winter tourist and excursion fares, holiday fares and Pullman bargain fares. As a result of these opportunities, passengers are able to travel at less than the basic rate at almost any time. In the western territory, for example, mileage books enable a patron to ride a train at any time for 2.7 cents a mile. He can make a round trip between any two points in the western and southwestern territories at any time at a rate of one and two-thirds times the one-way rate, while if he travels over the week-end between points in western and southwestern territories, the fare is only one fare plus 25 cents. In addition, he may take advantage of summer excursion and tourist fares and the class rates between Chicago and the Pacific Coast, the Century of Progress fares and a variety of coach and sleeping car excursion fares.

The large number of low fares in the western territory is a result of two objectives. One is to establish rates sufficiently low to compete with other forms of transportation. The other is an experiment to determine what effect low rates will have on railroad revenues and to what extent they will increase railroad patronage. Under the first objective may be included mileage books, party fares and excursion rates. The second group may include low rates established for a limited period of time.

Many Types of Rates Developed

For many years the railroads have operated low fare excursions on holidays and week-ends and have placed low fares in effect for special movements. In recent years this practice has developed into such projects as class fares, mileage books, mystery excursions, all-expense excursions, week-end fares and semi-permanent low coach fares.

While low coach fares have been employed for many

years, it is only within the last five years that they have gained such prominence. In 1929, certain western railroads placed a coach rate of $52.50 in effect between Chicago and California points. In 1930, the Southern, the Texas & Pacific and the Chicago, Milwaukee, St. Paul & Pacific experimented with low coach fares to determine their effect on competition. In the same year, class fares were established between Chicago and California points.

In 1931, the St. Louis-San Francisco received permission from the Interstate Commerce Commission to establish a two-cent-per-mile rate between all points on the system for a period of six months. This was the first time that the basic passenger rate was reduced since 1920. The low rate was met by the Missouri Pacific, the Missouri-Kansas-Texas, the St. Louis Southwestern, the Chicago, Rock Island & Pacific, the Atchison, Topeka & Santa Fe, the Kansas City Southern and the Illinois Central, which placed the same rate in effect between competitive points for the same period. In the same year, the Chicago & North Western established a two-cent fare on seven sections of the system for a six-month trial.

In February, 1931, the Southern Pacific inaugurated its "dollar day" rates, wherein a round-trip fare of three-fifths of the one-way fare was placed in effect over the system. The Western Pacific and the Atchison, Topeka & Santa Fe established the same rates, the former applying them to the system and the latter between certain points. In 1931, the Nashville, Chattanooga & St. Louis established reduced passenger fares for the summer months with a rate of one cent a mile for round-trip tickets sold each Friday, Saturday and Sunday. The Pullman Company in 1931 started to operate reduced sleeping car excursions, and railroads in the Southwestern Passenger Association territory offered family bargain fares from points on their lines to points in Texas.

In 1932, western carriers agreed to participate with eastern carriers in a series of one-cent-a-mile coach excursions from points on the Atlantic Coast to points in Colorado. Carriers serving the Northwest also placed class rates in effect between Chicago and the Pacific Northwest. The Chicago, Milwaukee, St. Paul & Pacific operated a cent-a-mile excursion from Chicago, Milwaukee, Wis., and the Twin Cities to Yellowstone National Park. The Southern celebrated its thirty-eighth and the C. R. I. & P. its eightieth anniversary of incorporation by placing cent-a-mile rates in effect on the systems on June 18 and October 8-12 respectively. In April, 1933, the Louisville & Nashville, the Nashville, Chattanooga & St. Louis, the Gulf, Mobile & Northern and the New Orleans-Great Northern reduced the passenger rate to two cents and made it applicable to interstate tickets, the rate to be in effect for six months.

In 1932, a new type of low-fare excursion was popularized. "Mystery excursions", where the destination was unknown and adventure and diversion were features, were introduced by the Missouri Pacific, the Baltimore & Ohio, the Southern, the Great Northern, the Chicago & North Western and other roads. Excursions having such attractions as theatres, baseball games, dinners, dancing, etc., also were operated by the Chesapeake & Ohio, the Baltimore & Ohio, the Chicago & North Western and other roads.

The results of the many fares and excursion inducements offered during the past few years have been affected by many conditions. The results will be described in an article to be published in the *Railway Age* of July 8.

In conclusion, the basic rate problem resolves itself into two propositions. First, should the rate be reduced if it will substantially decrease passenger revenues? And secondly, should the rate be reduced to stop the decline in passenger traffic, even though the lower rate will not stimulate enough business to offset the loss in revenues? The eastern carriers say "no", while the western lines contend that the rate should be lowered and that if the eastern lines object to a lower rate, the western lines should be permitted to establish a lower rate independently.

Railway Salaries Greatly Reduced

WASHINGTON, D. C.

SALARIES of railway officers had undergone some sharp reductions in the year ended March 1 this year, in addition to general reductions made before that time, according to a compilation made by the Interstate Commerce Commission published this week as a Senate document at the request of Chairman Dill of the committee on interstate commerce just before Congress adjourned on June 16. If the information had been made available to the Senate earlier it might have shown less concern on the subject than it did during the session just closed. It was obtained from a questionnaire addressed to the presidents of the Class I railroads to ascertain what changes had occurred since March 1, 1932, to supplement the salary data compiled by the commission last year, which Senator Couzens had published.

Only 47 Class I railroads (those doing a business of $1,000,000 or more a year) were paying salaries of $25,000 and over to their highest officers on March 1, and 29 Class I roads were paying less than $10,000 a year. Last year only 20 Class I roads were paying less than $10,000. In 1929 there were 61 Class I roads paying salaries of $25,000 or more.

In 1932 the commission compiled information regarding the number of railway positions paying $10,000 or more annually, classifying 1,344 official positions which were paying that much or more or had been reduced from that basis since December, 1929. This was published in Senate Document No. 129 at the instance of Senator Couzens but received publicity mainly from a speech which he made emphasizing the comparatively few highest salaries. Under date of February 23 this year the commission addressed a letter to the presidents of Class I roads stating that it was deemed advisable to make a supplementary inquiry, since many changes were going on at the time that report was made. The form used this year did not call for a list of names or positions, but required a classification of the positions made to cover all of those assignable to Reporting Division No. 1 in the monthly report of the service of employees and their compensation covering "executives, general officers, and their assistants."

The total of such salaries in February, 1929, according to a table published with the compilation, amounted to 0.9 per cent of the operating revenues and 1.26 per cent of the operating expenses. In February, 1932, they amounted to 1.45 per cent of the revenues and 1.89 per cent of the expenses. The percentages were not compiled for this year.

The number of officers of Class I railways receiving salaries of $50,000 or more per annum was only 31 on March 1, 1933, as compared with 39 on March 1, 1932, according to the report. The number receiving $10,000

or more was 775, compared with 958 in 1932, and last year's compilation showed that at that time the number receiving such salaries had been reduced from 1,139 in 1929. In 1933 the report lists only two as receiving $100,000 or more but stated that this would be increased to three if the combined salaries of one officer serving two roads were included, as compared with four in 1932.

More Than Half Paid Less Than $5000

More than half, or 3,554, of the positions classified paid less than $5,000 in 1933, and only 86 paid $30,000 or more, while 130 paid $25,000, or more and 217 paid $20,000 or more. The average salary for February, 1933, was $541, as compared with $615 in February, 1929, $630 in February, 1930 and 1931, and $569 in February, 1932. Complete returns were received by the commission and the results were tabulated and explained as follows:

TABLE 1.—Classification of all positions assignable to Reporting Division No. 1, Executives, general officers and assistants in the monthly report of the service of employees and their compensation as of March 1, 1932 and March 1, 1933

Class I Steam Railways in the United States

Salary Class (Of reporting Division 1)	Number of Positions As of March 1, 1932	As of March 1, 1933
Under $3,000	661	760
$3,000 to 3,999	1,328	1,377
4,000 to 4,999	1,635	1,417
5,000 to 5,999	1,010	886
6,000 to 6,999	579	507
7,000 to 7,999	396	329
8,000 to 8,999	256	219
9,000 to 9,999	279	223
10,000 to 10,999	203	136
11,000 to 11,999	67	54
12,000 to 12,999	66	101
13,000 to 13,999	126	77
14,000 to 14,999	29	30
15,000 to 15,999	50	37
16,000 to 16,999	42	41
17,000 to 17,999	14	28
18,000 to 18,999	82	41
19,000 to 19,999	6	13
20,000 to 24,999	109	87
25,000 to 29,999	48	44
30,000 to 34,999	33	25
35,000 to 39,999	19	13
40,000 to 44,999	9	8
45,000 to 49,999	16	9
50,000 to 59,999	9	5
60,000 to 69,999	14	11
70,000 to 79,999	6	6
80,000 to 89,999	..	2
90,000 to 99,999	7	5
100,000 to 109,999	..	1
110,000 to 119,999	..	..
120,000 to 129,999	1	1
130,000 to 139,999	2	..
140,000 to 149,999	..	..
150,000 or over	..	..
Total	7,102	6,493

It should be especially noted that this inquiry covers all persons falling within the class of employees designated as "Reporting division 1, Executives, general officers, and assistants," in the regular monthly statistics of railway employees, whereas the special inquiry of 1932 was confined to officials receiving annual salaries of $10,000 or more. But in the present study, the 1932 figures have been put upon a basis comparable with those for 1933. Division officers and their assistants constitute a separate class and are not considered here.

The total number of persons included in the 1933 special tabulation was 6,493, a decline of 609 from the corresponding 1932 figure, 7,102, or 8.58 per cent. The following comparative figures from the regular monthly statistics permit of a computation of the change in the average monthly salaries and the relative importance of the total annual salaries and aggregate operating expenses and revenues:

TABLE 2. Reporting Division No. 1.—Executives, general officers and assistants. Class I steam railways, including switching and terminal companies

Period	Number of employees in class—middle of February	Aggregate salaries for February	Average salary for February	Ratio to February 1929 average salary	Ratio of aggregate annual salary of group to Operating revenues	Ratio of aggregate annual salary of group to Operating expenses
1933	6,529	$3,533,439	$541	88	...	...
1932	7,128	4,057,000	569	93	1.45	1.89
1931	7,540	4,750,799	630	102	1.30	1.69
1930	7,677	4,837,735	630	102	1.08	1.45
1929	7,617	4,686,063	615	100	0.90	1.26

It may be noted that the change in the average salary is affected not merely by salary reductions but also by the extent to which officials have been discharged in the various salary groups.

TABLE 3.—The following re-grouping of the data in the special return for 1933 may be convenient:

Salary Group	Number of positions As of March 1, 1932	As of March 1, 1933
Total number	7,102	6,493
Under $5,000	3,624	3,554
$5,000 or above	3,478	2,939
10,000 or above	958	775
20,000 or above	273	217
30,000 or above	116	86
40,000 or above	64	48
50,000 or above	39	31
60,000 or above	30	26
70,000 or above	16	15
80,000 or above	10	9
90,000 or above	10	7
100,000 or above	3	2
120,000 or above	3	1
130,000 or above	2	0

This table shows that in 1933, 31 officials received $50,000 or more per annum, compared with 39 in 1932. The number receiving $10,000 or more in 1933 was 775, compared with 958 in 1932. In 1933 there were 2 that received $100,000 or more.

The form on which the returns were made directed that in all cases where one individual held positions in two or more operating companies, the combined salary only be shown in the appropriate salary class. Apparently this combination was not made in one case in which the same individual is holding a $45,000 position in one company and a $90,000 in another. If this combination is made, the number of salaries over $100,000 would be increased to 3 in 1933 compared with 4 in 1932.

Highest Salaries Paid By 26 Systems

The summary in Table 4 gives the number of salaries for each road or system in the various salary classifications. The 31 salaries of $50,000 or more were paid by 26 roads or systems showing the following as the highest:

Atchison, Topeka & Santa Fe System	$60,000 to $69,999
Baltimore & Ohio	70,000 to 79,999
Burlington System Lines	70,000 to 79,999
Central of New Jersey	60,000 to 69,999
Chesapeake & Ohio and Pere Marquette	90,000 to 99,999
Chicago & North Western System	50,000 to 59,999
Chicago, Milwaukee, St. Paul & Pacific	60,000 to 69,999
Chicago, Rock Island & Pacific	50,000 to 59,999
Delaware & Hudson	90,000 to 99,999
Delaware, Lackawanna & Western	60,000 to 69,999
Denver & Rio Grande Western	50,000 to 59,999
Erie System	60,000 to 69,999
Great Northern	60,000 to 69,999
Illinois Central System	90,000 to 99,999
Lehigh Valley	70,000 to 79,999
Missouri-Kansas-Texas Lines	60,000 to 69,999
Missouri Pacific Lines	70,000 to 79,999
New York Central Lines	70,000 to 79,999
New York, New Haven & Hartford	90,000 to 99,999
Norfolk & Western	60,000 to 69,999
Pennsylvania System	100,000 to 109,999
Reading System	60,000 to 69,999
Southern System	50,000 to 59,999
Southern Pacific Transportation System	120,000 to 129,999
Texas & Pacific	50,000 to 59,999
Union Pacific System	90,000 to 99,999

Whereas last year's report had shown for the New York Central system 18 positions paying $25,000 or more in 1929 and 8 in 1932, the new report shows only 4. For the Pennsylvania system the 1933 report shows only 7 as compared with 30 in 1929, and 18 last year, and for the Southern Pacific 10 as compared with 15 in 1929, and 10 last year. The Santa Fe had 5 as compared with 5 in 1929, the Baltimore & Ohio 8, the Burlington 4, the Chesapeake & Ohio 8, the Milwaukee 3, the Rock Island 4, the Lackawanna 3, the Erie 4, the Illinois Central 3, the M-K-T 3, the Norfolk & Western 4, the New Haven 4, the Northern Pacific 4, the Reading 3, and the Union Pacific 6.

THE ROSEBUD MINE of the Northwest Improvement Company, Colstrip, Mont., a subsidiary of the Northern Pacific, has been awarded a certificate of honor by the United States Bureau of Mines for operating an open-pit mine without a fatality and only 82 lost-time accidents from January 1, 1925 to January 1, 1933, or 8 years, with an exposure of 3,044,208 man-hours, producing about 7,320,000 tons of coal and removing approximately 15,356,000 cu. yd. of overburden.

Superintendents Meet at Cleveland*

Two-day convention, held June 12-13, characterized by small attendance and year-old reports

FORTY-FOUR members attended the thirty-ninth annual convention of the American Association of Railroad Superintendents at Cleveland, Ohio, on June 12-13. The program was devoid of addresses or papers and was confined to the consideration of reports that were prepared originally for presentation at the convention that was scheduled to be held at Detroit, Mich., a year ago and was later abandoned. The reports were, therefore, out of date in numerous respects, in so far as they failed to take into consideration developments of the last year. All sessions were presided over by C. Forrester, superintendent, Canadian National, St. Thomas, Ont., and president of the association, assisted by Secretary F. O. Whiteman of St. Louis, Mo.

R. E. Woodruff Urges Greater Activity

In welcoming the convention to Cleveland on behalf of the railways, R. E. Woodruff, operating vice-president of the Erie, stressed the fact that the association is at the parting of the ways and that it must increase its membership if it is to continue. Membership can be increased, he said, only through increased interest, and the association must win this interest through the merit of its activities. The superintendents organization has a field all its own. Its activities conflict with those of no other organization, nor does any other organization deal with the problems of the superintendent.

Mr. Woodruff urged the association to develop a code of recommended practice, constantly revised to keep it up to date, as other associations do. In these days when the responsibilities of division superintendents are increasing, they must utilize every possible avenue of information. The superintendents association should be a most valuable medium of education, he said.

Among the topics which Mr. Woodruff suggested for consideration by the association were: (1) The best way of budgeting division expenditures; (2) the use of cost figures to stimulate operating efficiency; (3) the use of charts to reflect operating trends; (4) the training of division staff officers; (5) the number of switching crews that a yardmaster can supervise efficiently; (6) the measuring stick for determining the length of a train dispatcher's territory; (7) the conditions under which night chief dispatchers are warranted; (8) the measuring stick for determining the personnel of station forces; (9) advances in grade crossing protection; (10) educational requirements for applicants entering the various branches of railway service; (11) daily reports essential for a superintendent; and (12) the value of speed recorders on freight and passenger locomotives.

Other Activities

Agitation for some form of group insurance has been before the association for several years. This subject was brought before the association again this year through a report from a committee. Action was deferred for another year because of the limited number of members present.

At the concluding session of the convention, officers were elected for the ensuing year as follows: President, V. Parvin, general superintendent, Ann Arbor railroad, Owosso, Mich.; first vice-president, F. O. Coleman, superintendent, M. & St. L., Oskaloosa, Iowa; second vice-president, M. L. Hayes, superintendent of transportation, Mo. Pac., St. Louis, Mo.; third vice-president, H. C. Rochester, office assistant to vice-president, Can. Natl., Montreal, Que.; fourth vice-president, J. J. Brinkworth, assistant superintendent, N. Y. C., Buffalo, N. Y.; secretary-treasurer, F. O. Whiteman (re-elected), St. Louis, Mo.; directors (three years), N. Procel, vice-president, Natl. Rys. of Mexico, Mexico, D. F.; C. J. Brown, superintendent, Mo. Pac., Osawatomie, Kan. Chicago was selected as the location for the next convention.

Reports and Discussions

A special feature of the meeting was a thorough discussion of the uses and limitations of a dynamometer car, which was presented by R. A. Black, engineer of transportation, Can. Natl., Montreal, Que., as the report of a committee. This report will be published in a later issue.

A committee headed by R. F. McCaslin, inspector of transportation, Mo. Pac., St. Louis, Mo., presented a report on the handling of passenger trains, in which numerous more or less generally recognized precautions were presented, including careful switching, care in the starting and stopping of trains, etc. Emphasis was also placed on the importance of instructing employees in the essentials of courtesies in their contacts with passengers.

Numbers Versus Symbols

The growing practice of substituting symbols for numbers for the identification of freight trains led the association to assign to a committee the investigation of the relative merits of these two systems. The report of this committee, which was prepared by G. H. Minchin, superintendent, A. T. & S. F., Chillicothe, Ill., as chairman, follows in part:

The practice of handling trains by number is one which most roads have followed for many years. This is a convenient method for reports, the numbers, together with the symbols, indicating the date of departure from point of origin; such as "No. 34-A" indicating a certain schedule departing from point of origin on the first day of the month, and showing supervising officers not only the identity of the train, but its origin, destination and time due.

There are other refinements of this system. For example, one road uses such numbers as "No. 52" and "No. 54" for eastward schedules and "No. 51" and "No. 55" to designate westward schedules, applying such numbers without a prefix to trains operating all the way through, while sections for certain junctions are designated with a prefix, such as "D&H No. 52," indicating a train for a D. & H. connection. Another road uses symbols, such as "A-B-2," indicating a main line schedule operating eastward between two large cities, while the schedule in the reverse direction is known as "B-A-1," these symbols being carried all the way through.

In more recent years, the designation by symbol has grown. One road, for example, uses "GFX" to designate a schedule handling green fruit from California, and after this has been established, with proper advertising, the trade as well as the

* Part I of a two-part report of the convention of the American Association of Railroad Superintendents at Cleveland, Ohio. Part II will be published in an early issue.

railroad itself, becomes thoroughly familiar with the schedule and knows when it is due to leave California, when it is due at eastern junctions, etc. Some other roads have adopted the practice of giving certain freight trains appropriate names to indicate the class of traffic they handle; for instance, one road uses the name "The Gas Wagon" to indicate a schedule handling automobile accessories.

One advantage of a well-organized, well-advertised system of designation which can be secured from either one of these systems is that patrons become familiar with the designation of a schedule, and when advised what schedule is handling their business, whether it be a number, a symbol or a name, can readily figure when they should receive it.

Discussion

V. Parvin (Ann Arbor) advocated the use of symbols for trains. He stated that some years ago the Ann Arbor took all through freight trains off its timetables and gave them symbols, the results of which have been so satisfactory that the road has recently done the same with its local trains. He finds that shippers, as well as employees, quickly accustom themselves to the use of the symbols. Geo. Brophy (Un. Pac.) stated that his road follows the same practice, giving certain trains such symbols as L.A. (for Los Angeles destination), O.S. (for Oregon Short Line points), etc.

Long Engine Runs

The consideration of long engine runs, with reference especially to their practical limits for both passenger and freight service and the considerations that enter into the determination of these limits, has been before the association for some years. A report prepared by a committee of which E. E. Hanna, superintendent, M-K-T., Denison, Tex., was chairman, is abstracted below:

Long locomotive runs are generally considered to be such only when locomotives are regularly operated over two or more districts where power formerly was changed. The most important object in extending the length of locomotive runs is to increase their productive time or, in other words, to obtain a greater monthly mileage and utilization of locomotives.

The advantages and the economy of running locomotives over two or more divisions when the topography and operating conditions permit, are as follows:

(1) Increased Mileage. We have yet to learn of a single case where the extending of locomotive runs has not resulted in increased mileage over a period of time. However, increasing the length of runs 100 per cent does not necessarily mean the same increase in locomotive mileage, although it does usually range from about 30 per cent to approximately 100 per cent.

(2) Reduction in Number of Locomotives Required. An increase in locomotive mileage is equivalent to a corresponding increase in locomotives. For example, on one representative road, 15 locomotives made 68 per cent more mileage per month after they were run through, which enabled them to do the same work as 25 locomotives operating over the old runs. The following are typical reports from other roads: Five locomotives cover the service as compared with 9 formerly; 2 in place of 4; 5 in place of 6; 26 in place of 52; 38 in place of 40; 6 in place of 12; and 47 in place of 54. In every case reported, there was a reduction in the number of units required to maintain the service by increasing the individual mileage consequent to increased length of runs.

(3) Increased Railroad Capacity. The extension of runs on the New York Central through one of its congested eastern terminals serves as a good example of increased capaciyt. By running engines through this terminal, there are saved three movements per engine through an interlocking plant for each eastbound engine operated, four movements through a second interlocking plant for each westbound engine, and two movements per engine over a drawbridge. This particular terminal was so crowded at times that it was almost impossible to find storage room for locomotives while awaiting trains when power was changed at this point. Running locomotives through this terminal eliminated the necessity of finding additional storage room, and saved delays, thus speeding up operation.

(4) Economy at Terminals. The extension of locomotive runs results in immediate and noticeable decrease in mechanical and stores expense at points where locomotive changes were formerly made, and no appreciable increase in these expenses at terminals of the extended runs. In fact, long runs have been a primary factor in the successful centralization of locomotive maintenance. The cost of turning a locomotive after it has covered two or more divisions is little, if any, more than if similar attention had been given at intermediate points; and repairs can be made in a more substantial and workmanlike manner, as there are ample facilities and time to do the work properly. The elimination of mechanical attention at small outlying terminals also permits of a reduction in the number of expensive tools and machinery at points where they are used infrequently, and their concentration at main terminals where they can be utilized to better advantage, thus reducing the investment in these facilities.

(5) Saving in Fuel. Long runs result in large savings in fuel, due to diminished needs for firing up and holding power under steam. A check made at one point on the Missouri-Kansas-Texas showed a saving of $5,500 per annum in this item alone.

(6) Increased Mileage Per Unit. It would appear reasonable that we should get as much, if not more, mileage out of a locomotive if it is run off in, say, two years, as in three or four years, as we know that time and the elements collect their toll whether a locomotive is in operation or not. Also, it is a question whether the cooling down and firing up strains in a locomotive do not cause more damage than fair service.

(7) Engine Failures. It appears that engine failures are not affected by the mileage which a locomotive makes during its individual run. Analysis of engine failures shows that the majority of the failures take place on the first division and that the mileage of the individual runs has little or no effect upon the number of failures experienced.

Considerations fixing the limits of extended locomotive runs, both passenger and freight, must, of necessity, be of local determination, after individual investigation and experiment. Many factors must be considered—topography, kind and quality of fuel, quality of water and location of water and fueling stations, obsolescence of equipment, present location of terminals and density of traffic. The committee feels that under favorable conditions passenger locomotives can be operated successfully up to 1,000 miles and freight locomotives to 600 miles.

After all is said and done, the consideration of prime importance is not so much the attainment of the longest possible locomotive runs, but the attainment of the greatest mileage per unit of time per locomotive owned, with the smallest fuel consumption and the least expenditure for repairs and engine-house attention. This can best be done by designing equipment to fit the special service requirements, providing boilers of ample capacity and applying standard devices that will increase efficiency and reduce fuel consumption.

Discussion

The discussion of this report indicated the conviction of those present that long engine runs are here to stay. C. J. Brown (Mo. Pac.) stated that his road is continually extending engine runs. President Forrester believes that most railways are now committed to the economy of long engine runs. He cited one run in Western Canada, in which the locomotive is not detached from its train for a distance of between 1,000 and 1,300 miles. He emphasized the advantage of this practice in the winter time where it eliminates the danger of steam lines freezing while changing engines at intermediate terminals.

Rail Motor Cars

The use of rail motor cars has increased rapidly, indicating that the railroads have found this type of equipment advantageous. To bring up to date the results possible from the use of such equipment, a committee headed by W. J. Warnick, superintendent, T. H. & B., Hamilton, Ont., presented the following report:

During the last ten years, the number of new units placed in service each year was as follows:

Year	Motor Cars
1922	49
1923	71
1924	112
1925	136
1926	135
1927	164
1928	167
1929	132
1930	56
1931	30

While the number of units ordered during the last four years has shown a marked decrease, the capacity of the power plants

has indicated a very substantial increase in horse power rating. In 1926, 86 per cent of the 135 cars ordered had power plants of 300 h.p. or less (the greater number having ratings between 200 and 250 h.p.) while in 1931 there was only one new unit of less than 350 h.p., and all the other cars had power plants of 400 h.p. or over. This indicates a general tendency towards the use of more powerful units, which enlarges the field for their use, as with such increased power they are capable, in the majority of cases, of handling satisfactorily three or more trailers, either passenger or freight, and can be used in both main line and branch line service.

In addition to their use as substitutes for steam equipment in branch line passenger service, they are now being more generally used to operate mixed trains, and there is still a field for them in local way-freight service, thereby expediting the handling of merchandise shipments in territories where competition from other types of transportation is keen, and at the same time reducing the cost of operation to the minimum.

It is apparent that the field for the rail motor car has hardly been touched. This is forcibly brought to our attention when we find some railroads using 30 to 40 of these cars, while other railroads operating under similar conditions, and frequently in the same territory, have as yet only a few of them in service. This is difficult to understand when it has been demonstrated that there is a saving of at least 50 per cent in operating cost in favor of the rail motor cars as against steam service.

The committee feels that this type of unit can be used to advantage:

1. To operate main line local passenger service and relieve through passenger trains from making local stops.
2. To operate suburban service where steam equipment is still in use.
3. To handle branch line passenger and mixed train service.
4. To handle way-freight peddler service on main lines, which can be handled in conjunction with a pick up and delivery system by making use of the present express company's services in terminals or large centers, and by the use of the local drayage service in smaller towns and villages.

These cars have proved that they can maintain their schedules under practically all weather and climatic conditions, and in territory where considerable snow is encountered, proving that they are capable of operating as well, if not even better, than steam power.

Reducing Train Stops

A committee composed of members of the association on the railways of Mexico, headed by J. J. Franco, general superintendent of the National Railways, presented an elaborate report on Practical Measures for Reducing Train Stops. In this report, the committee first presented an analytical study of starting and stopping trains of varying tonnage and speeds, with charts to enable this cost to be determined for any combination of these factors. These charts, while based on operating figures collected on the Mexican railways, illustrated the manner in which similar charts could be prepared by any other railway or railways.

The report then made specific reference to numerous factors contributing to the elimination of train stops, including the prevention of engine failures, fuel and water of proper quality, larger locomotive tenders and auxiliary tanks, the thorough inspection of equipment at terminals, the use of "19" train orders, the concentration of switching on line by certain trains, slow orders because of defective track conditions, etc. The report also referred to such modern developments as centralized traffic control, telephone train dispatching and dispatcher semaphore control. In the discussion of the effect of the location of water stations at train stops, the committee stated that reductions in operating costs have been effected on the Torreon division of the National Railways of Mexico during the last few years by eliminating nine water stations and the corresponding stops, made possible by the use of auxiliary tanks. Water stations have also been rendered unnecessary at some points on these lines by the use of locomotives with larger tender capacity, which were in turn made possible by the reconstruction of the track and the laying of heavier rail.

Discussion

Joe Marshall (A. R. A.) called attention to the delays to trains resulting from the slow handling of mail at stations, believing that this is a matter that warrants the attention of superintendents. W. J. Warnick (T. H. & B.) said that his road has installed 12-in. stand pipes at stations to reduce delays. O. J. Limestall (T. P. & W.) stated that he has installed 15-in. stand pipes at three points to reduce delays to trains taking water.

C. J. Brown (Mo. Pac.) stated that as a result of the use of an auxiliary water tank on a 338-mile division, he has been able to reduce the number of water stops from six to three and that, as a result, he has been able to establish a new low cost per thousand gross ton miles in the face of a marked reduction in traffic. President Forrester urged, as a means of eliminating train stops, the more extensive use of spring switches, the use of the "19" train order and the use of larger engine tanks, believing that in this day no road should use tanks of less than 15,000-gal. capacity. He opposed the use of extra tanks in cold country because of the necessity for heating them and also for storing them within buildings at terminals, offsetting a large part of the economy. V. Parvin (Ann Arbor) described the marked success that his road has achieved in speeding up trains by avoiding unnecessary delays. Taking the attitude that little delays, if allowed to continue, grow into serious delays, he has made it a practice to follow up each avoidable delay, even if it involved only three or four minutes. C. J. Brown stated that a few years ago he installed a number of remote-controlled switches and also a number of spring switches, and that at the present time the remote-controlled switches are out of service on account of the control offices being closed temporarily as a retrenchment measure, while the spring switches are still functioning. As a result of this experience, he is now inclined to favor spring switches, wherever practicable, over remote-control switch operation. F. S. Mitten (L. V.) stated that his road has recently made a study of the location of certain of its automatic signals and their effect on train delays and that as a result several intermediate signals have been taken out.

Heavier Car Loading

In these days when the railways are seeking every bit of traffic there is, it is to be expected that less attention is given to heavier car loading. For this reason, a report on this subject by a committee of which A. P. Stevens, district manager, Car Service division, A. R. A., New York, was chairman, is particularly timely. The report of this committee follows in part:

We have frequently heard in the recent past expressions to the effect that in these days of limited tonnage and huge surpluses of equipment, the present is no time to talk about greater utility of freight cars. This is another of those erroneous ideas that is prevalent as to what heavier loading means and what the practice will accomplish. If ever there was a time when heavier loading should be followed closely, that time is now.

In the past, we have defined the term "heavier loading" to mean loading to capacity, when the volume of movement is sufficient to justify such loading, and when to follow such practice will not affect the methods of doing business on the part of either the receiver or the shipper of the commodity in question. This definition limits the scope of activity by removing from consideration the small shipper or receiver who is at present a user of transportation, but whose inventory requirements are met by one car or perhaps even as many as three cars loaded to less than capacity in a period of 30 days. It also eliminates from consideration such expedients as sailing day plans, double loading to

two or more consignees at the same destination, and other practices associated with the campaign for heavier loading which were instituted as a conservation measure in war time.

We are still dealing with conservation, but conservation of a more vital element than car supply—the conservation of revenue. In performing transportation service, railways create what is generally considered by all transportation men to be the basic unit of transportation by which we measure the utility of the service. That unit is the gross ton-mile. The unit is created by the weight of the commodity plus the weight of the car which contains it in moving one mile. However, the income from this movement is based, not on the gross-ton mileage performed, but on the net-ton mileage, which is the weight of the commodity alone and which is the only part of the movement that produces revenue.

With this statement of rather elemental fact as a background, it can be clearly seen that the ratio of net ton mileage to gross ton mileage is an all-important factor. On this ratio depends the color of ink used in the balance sheet. If the railroads could operate as they did in 1930 with the ratio of net ton mileage to gross ton mileage of 41.9 per cent and make money, consider what they would make if they could bring that ratio up to a better relationship with the gross as it was in 1920, ten years before, when the ratio of net ton-miles to gross ton-miles was 49.1 per cent. An examination of freight operating statistics of the Class I railroads for the period 1920-30 shows a steady declining ratio of net to gross ton-miles. Some of this is perhaps occasioned by changes in the nature of the commodities transported, such as, for instance, a large increase in fruits and vegetables, requiring the use of refrigerator cars, which it is not possible to utilize in a complete turn-around movement; an increase in coal movement, which also requires a specialized type of car; and increases in the movement of livestock or tank car commodities which affect this ratio.

The only possible avenue of approach to the problem of heavier loading is an individual analysis of the movement of commodities as they occur over a line. The first step is to arrange to secure information regarding commodities originating on the line or destined to stations on the line from other railroads, which indicates that there is a movement of multiple carloads of the same commodity from the same shipper to the same receiver in a 30-day period. If we have a receiver of a commodity like feed, for instance, who in a 30-day period receives from the same shipper four carloads which are loaded to less than the carrying capacity of the equipment, let us see what it would mean for this man to practice heavier loading. If he receives four cars a month, it is quite probable that he gets one car a week. Now, if we were to take this same quantity of material and ship one car each 10 days, we would have the same proportion so far as the inventory is concerned, and we would save the shipper loading the other car, save the receiver unloading the extra car and in addition perhaps save him money in other ways. To the railroads, it means an increase in tonnage per car and an increase in revenue per car, again bringing into close relationship the net to the gross ton mileage. Several carriers are actively following the practice of heavier loading. Those roads are making money; those which are not following it are overlooking one method by which they can reduce operating costs by bringing into closer relationship their net and gross ton mileage.

Discussion

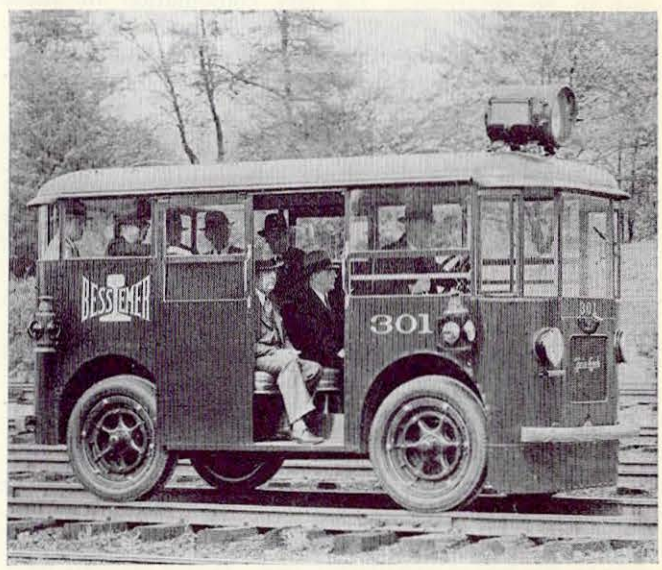
In opening the discussion of this report, V. Parvin (Ann Arbor) called attention to the trend today toward smaller loads, induced in large part by truck competition. He cited changes that have occurred in the sugar industry where the unit of shipment was reduced from 800 bags to 400 bags and recently to 200 bags. In addition to the trend toward lower shipping units, freight rates are also being reduced. Both of these trends affect the transportation ratio adversely. Mr. Parvin advocated the use of smaller and lighter cars to meet this change in shipping requirements. He also contended that the superintendent should be the last man on a railroad to advocate faster service, for it adds to his transportation costs. "What the shipper wants most," he said, "is dependable service."

H. C. Rochester (Can. Natl.) described the measures which his road has taken to promote the heavier loading of cars by showing shippers how it is to their interest to do this. He cautioned, however, against attempting to go too far, for it may tend to drive traffic to other transportation agencies. Mr. Rochester took issue with Mr. Parvin regarding faster schedules, stating that his road has regained considerable traffic by speeding up trains. B. Mendez, Jr. (Natl. Rys. of Mex.) reported that the railways of Mexico have been forced to reduce carload minima on many commodities by half, because of the inability of consignees to accept and handle heavier shipments. The Mexican railways are meeting competition of other transportation agencies by reducing carload minima, lowering rates and increasing speeds.

C. J. Brown (Mo. Pac.) contended that superintendents are traffic as well as operating officers, with responsibilities to get as well as to hold business. He expressed the opinion that the railways are facing the necessity for drastic reductions in their minimum carload requirements. O. L. Young (Frisco) urged that the railways provide lower minimum loading regulations, where required for certain types of business, and endeavor to increase loadings on other commodities which lend themselves to such action. In line with this thought, the association voted to accept the report and to urge superintendents to study the needs of each shipper with the idea of meeting his particular requirements and at the same time increasing carloadings where this was practical.

Twin Coach Rail Unit for B. & L. E. Branch Line

EMBODYING a number of departures from standard railway practice and representing a novel combination of train and bus characteristics, a Twin Coach delivery vehicle of the enclosed type, specially fitted for railway passenger service and equipped with Firestone pneumatic rail tires, was recently delivered to the Bessemer & Lake Erie by the Twin Coach Corporation, Kent, Ohio, for use on a branch line in a mining district, to replace a train consisting of a locomotive and a combination passenger and baggage car. The railroad has been required to maintain passenger service on the branch line, a 10-mile spur extending from Branchton, Pa., on the main line to Hillyards, on which passenger traffic has dropped nearly to the vanishing point. The refitted Twin Coach delivery unit, with seats for 12 passengers and sufficient space for baggage over the engine housing



The Twin Coach Delivery Unit, with Firestone Pneumatic Rail Tires, Purchased by the Bessemer & Lake Erie for Branch Line Service

in front of the operator, is expected by the railway to meet all necessary requirements at the lowest cost.

With the exception of a number of details, the coach has standard Twin Coach delivery vehicle specifications, including a four-cylinder, 40-hp. engine and a conventional bevel gear drive to the rear axle, with a 4⅝: 1 gear ratio. A B-K vacuum booster brake has been added to the regular hydraulic service brake system. The body is of all-steel construction, with treated and weather-proof tongue-and-groove oak flooring and housing platforms. It is provided with a sliding door on each side near the center, and is painted the standard brown of the railroad on the outside and artillery gray on the interior, with an ivory ceiling. A pilot plate is provided at the front of the body.

The seating arrangement provides for four passengers over each rear wheel housing, with two two-passenger seats back of the operator and facing forward. The operator's seat is of the saddle type and folds forward out of the way when not in use. All seats are upholstered in machine-buffed brown leather.

Because of legal requirements, it was necessary to furnish the unit with a headlight sufficiently powerful to make objects 800 ft. ahead of the car clearly distinguishable. For this purpose an Electric Service P-25-type headlight with a 108-watt bulb was mounted on the roof, and the electrical system of the vehicle was changed from 6 to 12 volts. A back-up light, consisting of an ordinary automobile-type headlight, was mounted in the rear panel of the body, and lamp and signal brackets for regular railway oil lamps were installed at each corner. Two froster dome lights were installed in the ceiling of the interior, and ventilators were placed in the roof.

The rail tires are the standard Firestone 4.50-24 pneumatic rail tires with steel rail flange and adaptor, and are mounted on standard Twin Coach wheels, so that the rail tires can be taken off and replaced with ordinary tires for highway operation, if desired.

What Happens When Bolts Are Tight*

Presenting results from tests on rail joints to determine the effects of wrenching and speeds on moments and stresses

By Dr. A. N. Talbot†

Professor Emeritus, University of Illinois, Urbana, Ill.

IT is obvious that the mere stretch of a bolt does not provide any considerable degree of protection against the lateral movement and wear of joint bars in maintaining tightness. A bolt tension of 20,000 lb. corresponds to a stretch in the bolt of about 0.005 in. Something more is needed to act against lateral movements which result from the natural bending and twisting of the bars under load. It may be expected that the flexure of the bars longitudinally and perhaps vertically, as the bolts are tightened, will provide through springing action a recourse against loss of tension considerably greater than will be obtained by the stretch of the bolts. In the tests to be described, the results of which are shown graphically in Figures 1, 2 and 3, the joints were tested without spring washers. The joints involved in the tests included angle bars for the 127-lb. rail section used on the New York Central, angle bars for 130-lb. P.S. rail, continuous bars for this rail and the so-called Santa Fe symmetrical bars for 130-lb. R.E. rail.

How the Tests Were Made

As a preliminary to the observations of a test, the bolts in the joint under investigation were tightened to 20,000 lb. and the load on the joint was applied five times. The bolt tension was then released and the nuts were turned up snugly without the bars leaving their close contact with the rail. The nuts were then wrenched up by increments of one-quarter turn, or 90 deg. The magnitude of the corresponding bolt tensions are recorded on the vertical scale of Fig. 1 for four kinds of bars, two of them being short and two long. In this figure, the amount of rotation of the nut is plotted horizontally and this also represents the amount of linear movement of the nut along the bolt—one-half turn, a rotation of 180 deg., being equal to 0.06 in. of such movement. By reference to the diagram, it will be noted that to reach a tension of 3,000 to 5,000 lb., the nuts were given from a quarter to a full turn; representing a movement of the nut along the bolt of from 0.03 to 0.12 in. On the other hand, to go from 5,000 to 20,000 lb., the full range of desirable bolt tension, required a further rotation of only one-quarter to one-half turn, representing 0.03 to 0.06 in. of nut movement, and amounting to, say, 5 to 10 or more times that obtained from the stretch of the bolt in maintaining bolt tension.

Other Tests Gave More Detailed Data

A more detailed test was made with the Pennsylvania 38½-in. angle bars. In this test, which was made after preliminary loadings similar to those just described, the bolt tensions were measured after each increment of wrenching, before a load was applied and also after the release of the fifth application of the load. After a tension of 20,000 lb. had been reached, the nuts were

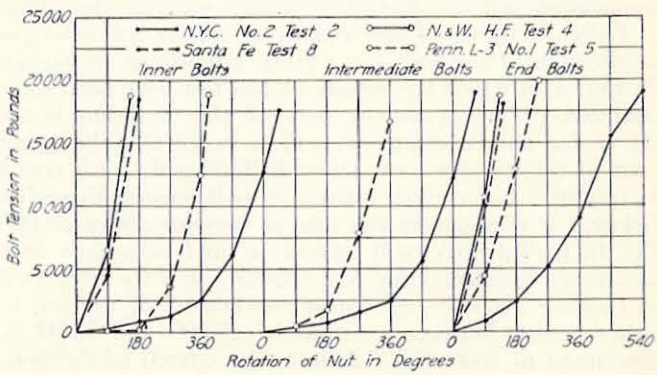


Fig. 1—Rotation of Nut and Corresponding Bolt Tension for Four Forms of Joint Bars

* From a lecture given at the convention of the American Railway Engineering Association in Chicago on March 14.

† Chairman of the Special Committee on Stresses in Track.

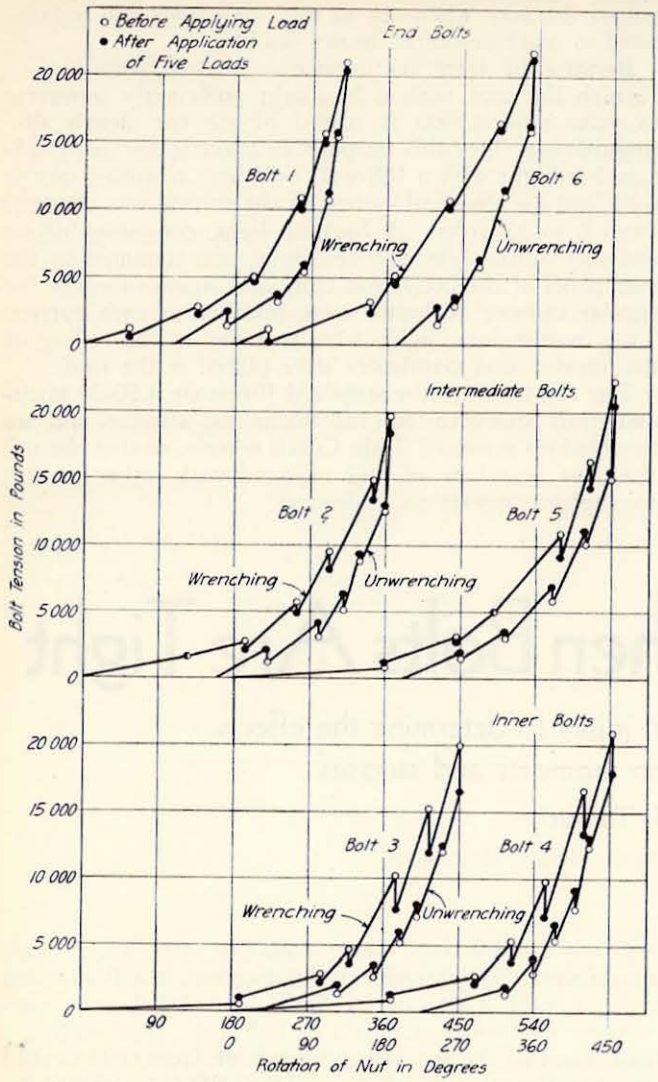


Fig. 2—Rotation of Nut and Corresponding Bolt Tension Before and After Five Applications of Load

unwrenched by increments and, as before, the same load was applied five times at each unwrenching. Figure 2 shows the magnitude of the bolt tensions observed in this test. For each position of the nuts, the open points represent the tension before the first load was applied and the solid points the values after the fifth load had been applied and released. It will be noted that after an increment of wrenching the tension drops off with the repetitions of the load, but that during an unwrenching the tension increases with the five applications of the load. The reason for this is apparent. The amount of change that occurs at a single application decreases with each application and five repetitions nearly exhaust the effect.

Only the values of the tension left in the bolt after the application of the load for a given wrenching are shown in Fig. 3, in which the results of this test have been summarized. The significant part of this diagram is the curve for unwrenching. It will be noted that the upper part of this curve is very steep, indicating that less travel is required for a given change in bolt tension than that below. It is apparent too that at tensions above 20,000 lb., the useful travel will become so small as to give little assistance in maintaining bolt tension. For the bars used in making the tests, the linear movements of the nut in unwrenching between tensions of 20,000 and 5,000 lb. amounted to from 6 to 12 times the stretch of the bolt. Although the top and bottom of the bar did not move inwardly as much as the movement of the nut, most of the spring would be available in maintaining the position of the bar with respect to the rail. Altogether, these tests suggest that the springing action of the bar itself helps to maintain bolt tension.

It is of special interest that both the laboratory and field tests included in the series under discussion confirm the finding of the Fifth Progress Report of the Joint Committee on Stresses in Track that for the symmetrical type of bar a minimum tension of 5,000 lb. may be expected to give satisfactory conditions for both vertical and lateral bending on straight track and light curves, with a corresponding minimum tension of 10,000 lb. for the angle bars. The upper limit of useful tension for both forms may be considered to be 20,000 lb. These values apply to track conditions after the bars have been worked into place and have approached a fairly stable position. It follows from the tests that the wrenching of bolts to 40,000 or 50,000 lb., as is sometimes practiced, gives little useful result in maintaining bolt tension, and it may be productive of ill effects in other ways.

Effect of Speed on Joint Stresses

We have all been wondering what effect speed has on the stresses in joints. To determine what this effect is, a series of tests was made covering a wide range of speeds. Figure 4 is a sample film record for gage lines at the top and bottom of the angle bars at mid-length,

Effect of Speed on Joint Moment Ratio—Ratio of Moment in Joint Bars to Moment in Rail with Static Loading

Test	Speed in Miles per Hour 5	45	70	90
A	.61	.63	.65	.65
B	.41	.50	.56	.68
C	.57	.63	.70	
D	.66	.72	.80	
E	.68	.71		
F	.67	.65	.77	
G	.87	.78	.93	
H	.85	.80	.86	
I	.84	.80	.70	
J	.47	.48	.45	
K	.43	.52	.42	

made during tests on the Pennsylvania for a speed of 45 miles an hour. At the top is a bolt-tension record, which shows practically no change in tension during the passage of the locomotive. The scale for a stress of 10,000 lb. a sq. in. is given at the left of each of the three stress records. The greatest stress recorded here was 22,000 lb. a sq. in. Other tests were made at 5, 45, 70 and 90 miles an hour. Generally three or more runs were made at a given speed, but in a few cases only two were made.

From the stress data obtained in the tests, the bending moment at the mid-section of the two bars was calculated. Since the moments in the several joints naturally

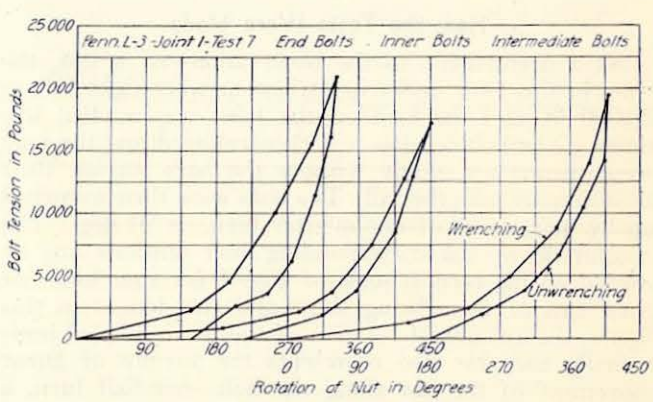


Fig. 3.—Summarized Values for Rotation of Nut and Corresponding Bolt Tension After Five Applications of Load

differ considerably, owing to differences in conditions of rail support and fit of bars, their values have been expressed in terms of the average moment in the full rail under static loading as more readily giving comparisons of the effect of speed. In the accompanying table, the value of the joint moment ratio for test A in the first line means that the average moment developed in the joint bars at mid-section for 3 or 4 runs at 5 miles an hour was 0.61 of the average moment found in the full rail with static loading. Reading across the table for the same joint, the value is seen to be 0.63 at 45 miles an hour, 0.65 at 70 miles and 0.65 at 90 miles, almost no change in stress or moment in the joint bars for the several speeds.

It will also be noted that in all of the tests the increase with speed is generally small. In some of the tests there was even a decrease, as in test I. In test B, which showed an increase from the low value of 0.41 at 5 miles an hour to 0.68 at 90 miles, the value at the high speed may still be considered to be of moderate magnitude. In fact, the moment corresponding to the highest ratio in the table, 0.93, is, of course, less than the moment developed in the full rail under static loading.

Tests Covered Wide Range of Conditions

It should be kept in mind that these tests were made on different joints, with differences in bolt tension, with bars changed from one joint location to another and even with bars shortened to 24 in. and, of course, with diverse conditions of tie support. The joints in test A were 38½-in. angle bars, which had remained undisturbed for several months under heavy traffic and had an average bolt tension of 29,000 lb. In test B, in which the same joints were used, the average bolt tension had been decreased to 2,000 lb., and a gage 0.005 in. thick could be inserted for 3 and 8 in. at the two ends of the bars and a similar gage from 2 to 6 in. at their middle.

In test C the same bars had been sawed to a length of 24 in. and reinstalled with a bolt tension of 28,000 lb. Tests D and E were made at the same joint location with 38½-in. angle bars taken from another joint location and bolt tensions of 14,000 and 12,000 lb., respectively. The joint in test F, made at joint location No. 5, had remained undisturbed under heavy traffic for several months and the bolt tension was 14,000 lb. The bars used in test G were deformed laterally and had been installed in joint location No. 1 only a few days. The bolt tension was 12,000 lb. In tests H and I the bars from test G had been installed for a short time at joint location No. 3, with bolt tensions of 23,000 lb. and 13,000 lb., respectively.

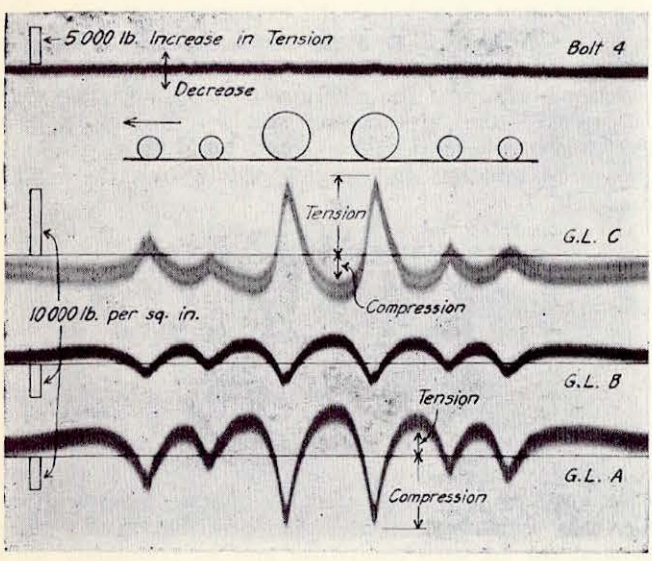


Fig. 4—Film Record of Stresses at Top and Bottom of Bar

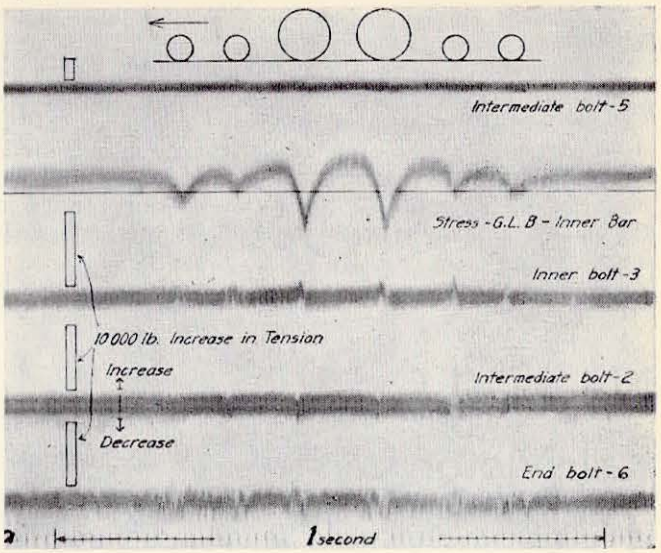


Fig. 5—Film Record of Changes in Bolt Tension

Test J was made on track No. 1 on a joint having 38½-in. angle bars and an average bolt tension of 2,000 lb. This track carries a heavy traffic, but is not in as good condition as track No. 4 on which most of the tests were made. The joint location of test K was on track No. 4 away from the other test locations and the joint had not been disturbed for a long time. These bars were 24-in. angle bars and the bolt tension averaged 6,000 lb.

Part of the variation in values at a given joint doubtless is caused by variations in wheel load at the joint in one or more individual runs by transfer to the other wheel on the same axle or to other wheels on the same rail. Altogether the effect of speed on the stresses in the joints is apparently no greater than the effect on the rail itself. These tests were made with an electric locomotive. The type used caused no great increase in stress and moment with increase in speed. It should be noted, however, that these locomotives give little dynamic augment, and that with a steam locomotive the dynamic augment for the drivers will give a corresponding increase in stresses in the joint, as it will also in stresses in the rail.

What Happens to the Bolts

Some speculation has been indulged in with respect to the effect of speed on changes in bolt tension during the passage of the wheels of a train. In Fig. 5, the one record of bending stresses at a gage line on the upper part of the angle bar, this record having peaks directly below the wheels, enables us to fix the position of the passing wheel loads with respect to the record of the tension of the four bolts shown. At the left, the scales give the change that would be necessary to record an increase of 10,000 lb. in bolt tension.

The actual changes in magnitude of the bolt tension on the records shown are small, being an increase of about 1,000 lb. in the end bolts with a similar decrease in the inner bolts. In all of the tests at various speeds up to 70 miles per hour, the changes in tension were relatively small, generally between 500 and 2,000 lb. with a few cases as much as 3,000 lb., values which are comparable with those found in statical laboratory tests. The sign of the change in tension, whether positive or negative,

was generally similar to that found in static tests in the laboratory.

The conclusion to be drawn from the tests is that the magnitude of the change in bolt tension during the passage of a train is not of great importance. It is to be expected that an even smaller change in magnitude will be found with symmetrical bars, since they do not have the same degree of tendency to swing inward at the middle and outward at the ends as the angle bars have.

New Fuel for Rail Motor Cars

THE Southern Pacific lines, in co-operation with the Butane Sales Company, San Francisco, Cal., has conducted tests of a new Butane fuel for rail motor equipment and secured some results of unusual interest. This fuel, C_4H_{10}, is a mixture of hydro-carbons obtained from natural gas and liquifies at 30 lb. pressure, absolute, per sq. in. at 60 deg. F. At 130 deg. F., the pressure is 97 lb. per sq. in. The heat content in gas per lb. of liquid at 60 deg. F. is 20,728 B.t.u.; per gal. of liquid at the same temperature, 99,500 B.t.u.; and the weight per gal. of liquid is 4.8 lb. at the same temperature. The octane rating is 115. The fuel may be shipped in tank cars, tank trucks or small containers, and it may be pumped with ordinary equipment and handled with practically the same ease as gasoline. The cost of Butane fuel is about the same as the cost of distillate per gal. It is available for delivery in any quantity, to any point on the Pacific Coast and certain other areas, and the Butane Sales Company is now laying plans to make this product available throughout the United States.

Southern Pacific Motor Train on Which Tests of the New Butane Fuel Were Made

For years, natural gas, or fractions thereof, has been used as fuel for stationary engines, but as the gas was looked upon as a superfluous product, very little attention was paid to efficiency in its use, and it was not until the year 1931 that engine manufacturers seriously considered the use of Butane gas as fuel for internal-combustion engines, particularly in areas endowed with a quantity of wet gas. One of the most successful pioneers in the use of this fuel in internal-combustion engines of all types is the Atlas Imperial Diesel Engine Company, which, after two years' experimentation, perfected a valve that mixes the gas and air in the varying proportions necessary to operate an engine efficiently under any combination of speed and load, between idling and wide-open throttle. This company converted one of its Diesel engines to use Butane fuel and, after running the engine continuously for 1,000 hours, determined the following: (1) That compression ratio as high as 7 to 1, and mean effective pressures from 120 to 130 lb. per sq. in., may be used without detonation; (2) that combustion is practically perfect under normal running conditions as the exhaust contains no carbon-monoxide; (3) no carbon deposits; (4) no crank-case dilution; (5) cooler operating temperature; (6) Butane fuel consumed less than any other fuel consumed per horse-power-hour; (7) the high octane value of Butane fuel will result in a substantial reduction in maintenance costs.

During the early part of this year, a test of Butane fuel was made on Southern Pacific car No. 61 (McKeen type) and the results obtained were so satisfactory that the railroad immediately made preparations to test this fuel in one of its Brill-Hall-Scott cars of 600 hp., operating regularly between Los Angeles-Santa Barbara, Cal., and Los Angeles-Oxnard, and handling a baggage car on each run, except a standard Pullman is added on the return from Santa Barbara to Los Angeles. Prior to March 25, this car, operating on distillate after warming up with gasoline, consumed 1½ gal. of fuel per mile, and the lubricating oil was renewed every 800 miles. Between March 25 and May 1, this car ran approximately 10,000 miles on Butane fuel at a consumption rate of one gal. per mile, and one gal. of lubricating oil is added to each engine every 700 miles. On April 1, the engines of this car were equipped with new pistons to raise the compression ratio from four to one to six to one, and notable operating results were obtained from this change.

The fuel supply is carried under the car in six pintsch gas reservoirs, retired from the gas-burning equipment, and a seventh tank with a capacity of $\frac{1}{10}$ of the fuel supply is added as an expansion tank. The fuel is drawn from the bottom of each tank, through a 1-in. pipe, passing through the top of the tank, and through a shut-off valve into a 2-in. header equipped at one end with a hose connection for filling. The fuel supply is carried from the header, through a meter, to an emergency starting tank installed to gravitate fuel to the engines in cases where the air pressure is insufficient to do so. Compressed air, after passing through a dryer, is admitted into the top of the fuel expansion tank and from the top of this same tank through an air pipe into each fuel tank. Each air line is equipped with a glass bull's eye, and shut-off valve at the expansion tank to enable each tank to be filled separately, and until the fuel shows in the bull's eye.

From the top of the emergency tank, the liquid fuel is carried separately to each engine, through a heat exchanger, where it is vaporized and thence through pressure-regulating and mixing valves into the intake manifold.

In addition to the economy obtained by use of Butane fuel, there are further advantages which cannot be overlooked by operators of rail motor cars, particularly in view of the fact that passenger travel, in the future, must be induced to patronize the railroads, either by faster service, additional comfort, or both. The exhaust from Butane fuel is clear, odorless and is practically all carbon dioxide. To be able to operate rail motor cars without obnoxious fumes is a great improvement over conditions that have prevailed ever since this type of equipment came into use, but to operate them without any odor whatsoever, is a distinct contribution to a more general use of such equipment and its popularity with the traveling public.

Right to Fair Return Defended

Counsel contend that interests of shippers do not take precedence—Reduction deflationary

WASHINGTON, D. C.

ASSERTING that the repeal of the rate-making rule of Section 15-a of the interstate commerce act and the adoption of the new "flexible" rule in its place cannot affect the constitutional right of the carriers to a fair return, Alfred P. Thom and R. V. Fletcher, counsel for the Association of Railway Executives, in a brief filed with the Interstate Commerce Commission on behalf of all members of the association in the general rate reduction case, No. 26,000, urge the commission not to attempt "the deflationary act of reducing freight rates at a time when commodity prices have begun a decided upward swing." In this connection they point to the policy of President Roosevelt's administration to put prices back to where they were in the ante-depression period.

The effect of such a reduction in rates, the brief says "would be to bankrupt the railroads, render their securities of small value, make it impossible for them to retain their credit, cause them further to retrench in their expenditures, lead to additional unemployment in the field of railroad labor, cause them to be less able to assume a policy of purchasing, and in every way add to the present unhappy condition of the country." Other briefs were filed by counsel for the eastern, southern and western district roads discussing in more detail the testimony offered by shippers and carriers at the recent hearings relating to conditions in the several districts. Some extracts from the general brief follow:

The Fundamental Law Question Involved

In view of the showing made as to the failure of the carriers to earn their fixed charges in 1932 and the meagerness of net income, it becomes important to give consideration to the fundamental question of whether, under the Constitution of the United States and the Act to Regulate Commerce, the railroads are entitled as of right to earn enough money to pay the expenses of operation, taxes and have something left over to pay their fixed charges, in order that bankruptcy may be averted. It may be well to recall that the railroads of the United States for the year 1932 had net railway operating income of only $326,000,000 and that there was a deficit in net income of $152,000,000.

For the year 1932 the railroads as a whole earned 1.39 percent upon their investment, 1.51 percent upon the basis of the Interstate Commerce Commission's primary values, and 1.42 percent upon a rate base ascertained by taking 1920 values and adding thereto additions and betterments since that time. In other words, the railroads have earned upon the basis most favorable to the contention of shippers less than 40 percent of the rate of return (5¾ percent) found by the commission to be reasonable. Or, to state it in another way, if half of the property shall be considered as obsolete, unused and no longer necessary in the transportation service, the railroads would still have earned much less than a fair return upon the value of the property remaining, whatever method of computing valuation may be adopted.

No doubt something will be said as to the change now in the rate base brought about by the Emergency Railroad Transportation Act, 1933. Reference will no doubt be made to the fact that section 15a of the Transportation Act has been changed so that no longer is the commission required to fix rates which will yield a fair return upon the value of the property.

The new language defining the duty of the commission cannot, of course, affect the constitutional rights of the carriers. It should be remembered that section 15a as it appeared in the Transportation Act, 1920, did not assume to confer any additional privileges upon the carriers. It was understood that each individual carrier, by reason of the provisions of the Constitution, had a right to a fair return upon the reasonable value of its property. The only thing accomplished, or sought to be accomplished, by the rate-making section of the Transportation Act, 1920, was to require the commission to apply to railroads as a whole in a particular group the same principle which they were required by the Constitution to apply to each individual carrier. Therefore, section 15a in the Transportation Act, 1920, in no way modified, nor in fact could be conceived as modifying, the rights of the carriers under the Constitution.

The language of 15a in the Emergency Railroad Transportation Act, 1933, sets up certain elements which should be considered by the commission, provided it has latitude so to do under the Constitution. To state it in another way, the railroads are entitled under the Constitution to a fair return upon the value of property dedicated to public use. When this requirement has been met, after this right has been assured, the commission may then, in passing upon the question of what rates are proper and reasonable, consider the features and factors set out in paragraph (2) of section 15a of the new law.

It will be noted that these features are to be considered in the exercise of the commission's power to prescribe just and seasonable rates. The rates, however, must be compensatory in the constitutional sense, and it was not necessary for Congress so to assert in any legislation which lay within the power of Congress to enact. Superior to any statutory provision is the Constitution, with the rights therein guaranteed to the carriers. If there should be a conflict between a right protected by the Constitution and one not so protected, the right protected by the Constitution must be given precedence, and no power exists in the legislature or in any of its agencies to invade or ignore the constitutional right in order to meet some requirement expressed in the statute. No one has ever so far contended that the Constitution can be set aside or repealed or modified by a provision such as appears in the new 15a. In fact there is no suggestion in the act that Congress is attempting to ignore the constitutional rights of the carriers. We shall therefore consider the question of law involved from the viewpoint just announced, that this language of the Emergency Railroad Transportation Act, 1933, comes into play only after the constitutional requirements have been satisfied. It may be said that little is to be accomplished by rearguing and reasserting a principle so familiar and that it is a waste of time to labor the point: that whatever may be the industrial conditions prevailing in the country, those who own the railroads are entitled to a fair return upon the value of their property. However, this commission has recently used some language which may indicate the importance and necessity of reexamining the law as to what is the predominating element if there is a conflict between the right of a carrier to a fair return and the right of the shipper to rates based on the value of the service. In the *Fifteen Per Cent Case*, 178 I. C. C. 539, 563, there is a reference to a certain statement in *Smyth v. Ames*, 169 U. S. 466, 547, wherein it is said:

> What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.

It will be noted that in these two sentences there is no statement by the court as to which of the two principles shall predominate in the event that it is impossible for both to prevail. It is our purpose in this section of the brief to consider as concisely as may be just which of these principles is dominating, provided the commission finds it impossible to adopt a rate base which will satisfy both requirements.

In this same *Fifteen Per Cent Case* the commission quotes with some approval a statement in *Corpus Juris*, where it is said:

> The public is entitled to demand that no more shall be exacted from it than the services rendered are reasonably worth, and this right takes precedence even over the right of the carrier to a fair return on its investment when the two rights cannot stand together. In consequence, the value of the services to the public is an important factor in determining the reasonableness of the rates charged therefor.

We confidently assert that this statement by the author of *Corpus Juris* is not in accord with the law, that it is ill-considered and finds no support in the decisions of the Supreme Court of the United States. We express our regret that the commission has seen proper to assert that this statement of the law is accurate.

We are not sure that the commission has finally endorsed the accuracy of this general statement. We say that in the light of a statement found in a very recent decision of the commission in No. 23508, *Mountain-Pacific Oil Cases,* decided May 2, 1933, where it is said on sheet 58:

> The Supreme Court has held that we can not require traffic to be carried at less than cost plus a reasonable profit, regardless of whether the traffic can bear such rates. *Northern Pacific Railway v. North Dakota, 236* U. S. 585.

This statement in a case more recent than the *Fifteen Per Cent Case* indicates a return to a sound rule, the rule which we shall presently discuss.

In the *Turnpike Company Case* the dictum of the court declares that if establishing new lines of transportation should cause a decrease in the number of those who use the road, and for that reason there is a decrease in tolls, this is not in itself a sufficient reason why the corporation should be allowed to maintain rates that would be unjust to those who use the property. The doctrine thus gratuitously announced by the court does not disturb us here. We have shown that if you were to wipe out more than half of the property of the carriers, the net railway operating income would be less than a fair return, according to any standard, upon the amount left after so severe a reduction. If it be said that the railroads have lost traffic to competing agencies of transportation and are, therefore, not using all their plant, the answer is that, making all possible allowances for unused facilities, they are still not earning any respectable return upon the value of property now actually in use.

It may be helpful to inquire what is in fact the *undertaking* of the carrier when it enters the field of transportation. Does it engage to serve for any charge demanded by the state as being desirable for the public, and is it required even in times like these to operate at a loss? Or, on the other hand, is it the undertaking of the carrier to dedicate the property to public service in consideration of a fair return on the value of the property, and can it be required, having once devoted its property to public service, to sacrifice its right to a fair return, upon some theory that the value of the service should predominate over the right to a return?

The Supreme Court has had occasion to discuss the difference between what the state might undertake if it went into the transportation business and what a private corporation undertakes.

On the whole, it is very clear that the note in *Corpus Juris* is not valid authority for the contention that where there is conflict between the carrier's right to a fair return upon property actually used in the service of transportation and the right of the shipper to a rate which reflects the value of the service, the constitutional right of the carrier to a fair return should not prevail. In making this statement we are assuming that the railroad enterprise was well-conceived and honestly carried out, that it has not been extravagantly operated and that it performs a useful and necessary public service.

We are not to be understood as conceding for a moment that the present rate structure, which we are here seeking to maintain, is unreasonable and unlawful measured by the "value of the service" standard. We are contending that as a matter of law, even if it should be, for the sake of argument, conceded that the value of the service test will not sustain the present rate structure, there can be no reduction in rates, since such a reduction would quite obviously deprive the carriers of any return upon their investment and will make it probably impossible to pay operating expenses and taxes.

The provisions of the Constitution and, indeed, of the pertinent statutory provisions preclude the regulatory authority from giving precedence to the interests of the shipper over the right of the carrier to just compensation for its service, which compensation is essential to the maintenance of an adequate and efficient system of transportation—a result of sufficient public importance to justify the protection with which it is surrounded by the Constitution and the statutes.

The high governmental purpose, thus plainly declared, causes, and should cause, the commission to be keenly alive to the result of any proposed changes in rates upon the revenues of the carriers. These must not be so large as to impose an unnecessary and excessive burden upon the shippers. They must not be so small as to impair or destroy adequate and efficient instrumentalities of transportation. The motive and the guide in every case is the promotion of the public interest, but the law declares the sound view of what will best promote the public interest to be a policy, not based on temporary advantage to shippers, but of ensuring to shippers at all times an adequate and efficient supply of transportation facilities. It is recognized that it would be a short-sighted view to attempt to relieve from a temporary condition of industrial distress and depression by methods which would leave industry with a prostrate and inadequate supply of transportation facilities when the emergency is over and there is opened up a real need for transportation as a means of resuscitation and rebuilding the wholesome industrial life of the people.

Having in mind the high governmental interest, above outlined, in the revenues of the carriers and the fact that at the present time these revenues are confessedly insufficient to support an adequate system of transportation the commission, under such circumstances, will not feel justified, either from the standpoint of the public interest or from the standpoint of its own statutory duties, in fixing rates that will reduce revenues thus admittedly inadequate.

In passing on the question, the following principles would seem to be controlling:

1. Prima facie, a reduction in rates would result in a reduction in revenues, and the burden of proof is on those who contend that a reduction in rates will result either in no diminution or in an increase in revenues;

2. That proof of the contrary must be satisfactory and convincing and based upon a definite showing of the quantities of traffic that would move if the rates were reduced; and

3. That in the absence of such definite and convincing proof, the true principle to be applied is: A finding as to the future revenue of increased or decreased rates is not, strictly speaking, a finding of fact but a prediction. The commission has never felt that it ought to forbid a proposed increase in rates or to order a proposed reduction in rates on the sole ground that it is unable to find that it will accomplish its purpose, when the outcome is plainly a mere matter of judgment. The decision of such questions of judgment is a responsibility of management, and the commission is not the managers of the railroads.

This statement is the language of the Commission itself in *Increases in Intrastate Freight Rates (1932)*, 186 I. C. C. 615, except that the statement applies the same principle to the future revenue effect of a reduction in rates that the commission applies to an increase in rates, precisely the same principle being applicable to both.

Obviously the managements of these railroads must realize that they are dependent upon the business of their shippers and cannot be unsympathetic in their treatment of distressed and depressed industrial conditions. They may be confidently relied on to exercise their managerial judgment in favor of reductions in rates where reductions are justified, and this is especially true where such reductions would result in much-needed increased revenue.

Under the principles stated, the present application for a reduction in rates should unquestionably be denied.

Among the matters to be considered by the commission in any inquiry involving rates are, of course, the situation of the shippers, the condition of industry and whether or not the rates which are questioned impose an undue burden upon the shipping public, but these must be considered and determined in the light of the well-settled principles hereinbefore discussed.

Comprehensively considered, whether from the standpoint of the law as it has been evolved and settled through many years of earnest and faithful judicial thought or from the standpoint of the public interest in having ready an adequate and efficient instrument of distribution when normal conditions as to production and consumption are restored, no governmental order should be entered now further depleting the revenues of the carriers already insufficient for their support.

Testimony which we have briefly abstracted indicates the financial condition of the carriers in as complete a form as it can possibly be presented. The alarming decrease in net railway operating income and in net income, the inability of the railroads in 1932 to meet their fixed charges out of earnings, the huge amounts which they have been compelled to borrow from the Reconstruction Finance Corporation and the Railroad Credit Corporation, all indicate more forcefully than words can express that the railroads are not at this time in a position to withstand any substantial decrease in their revenues such as would be brought about by a rate reduction. When we remember that the railroads in 1932 lacked $152,000,000 of earning their fixed charges, any suggestion that revenues should be further depleted by governmental action seems to be without any possible support in justice or in reason.

Policy of Administration to Increase Prices

We have mentioned some instances of improvements in commodity prices. It is evident that the tendency is upward. It is difficult to select any one cause for a marked change in commodity price trends. Ordinarily the subject is surrounded with complexity. Economic forces do not work in a vacuum. There are many modifying factors which enter into the problem. It is evident, however, that it is the policy of the present Administration, as indicated by public expressions of the President, to in-

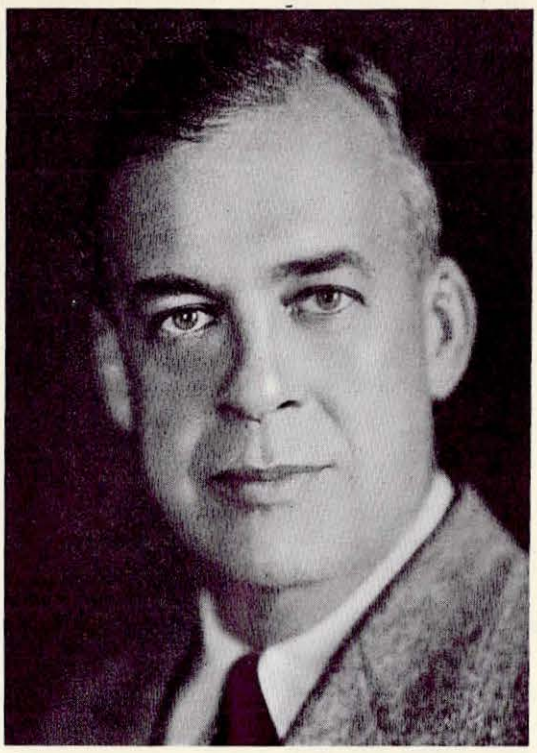
(Continued on page 900)

Commissioner Eastman Appointed Federal Co-ordinator

Says he is not expected to be czar of or manage the railroads, but to help them

WASHINGTON, D. C.

THE appointment of Commissioner Joseph Bartlett Eastman, of the Interstate Commerce Commission, as Federal Co-ordinator of Transportation under the provisions of the new railroad law just passed by Congress, was announced by President Roosevelt on June 16 shortly after he had made it effective by signing it. Under the terms of the law no confirmation by the Senate was required if the appointment was made from the membership of the commission. He will not resign from the commission but will be relieved of his duties as commissioner during his term of office to such extent as the President may direct except that he may not sit as a member of the commission in any proceeding for the review or suspension of any order issued by him as co-ordinator. The term of office is one year unless extended by proclamation of the President for one year or any part thereof. He will continue to occupy his office with the commission at Washington and may call upon the commission for such facilities and assistance as he may request and it is able to furnish, but will build up an organization of his own from the fund provided under the law by an assessment on the railroads at the rate of $1.50 a mile.



Joseph B. Eastman

Commissioner Eastman has been unofficially "on the job" for several weeks, and has participated actively in the preparation of the legislation and in its presentation to Congressional committees, but at the time of his appointment he was not yet ready to announce the details of his proposed organization or anything definite as to the nature of his plans.

Commissioner Eastman entered upon the performance of his new duties without any spectacular promises as to what he hoped to accomplish and he has carefully refrained from doing so in his testimony before the Congressional committees. Instead he issued a brief statement pointing out, by way of contrast with many published characterizations of his new position, that he was not expected to be a railroad "Czar" and also emphasized some of the obstacles represented by restrictions embodied in the act in Congress after the bill had been drafted by the President's advisers and approved by the Executive himself. The statement follows:

The "Emergency Railroad Transportation Act, 1933" does not pretend to be a complete or final answer to the transportation problem of the United States. Nor does it put the railroads under the control of a federal railroad Czar. It is a temporary and preliminary measure which is designed to pave the way to a comprehensive treatment of the transportation situation of a more permanent and enduring character. To this end it sets up a Federal Co-ordinator of Transportation, who is not to manage the railroads but whose duty it is, with the aid of the Interstate Commerce Commission, to help the railroads in exploring all possibilities for the avoidance of waste and preventable expense, and to encourage and promote and, if need be, require action which will have that result. He has the further and very important duty of carrying on research and study for the purpose of recommending to the President and to the Congress such further legislation, covering all phases of the situation, as may be necessary and practicable to place the transportation agencies of the country on a strong and stable basis and in a position to provide the facilities which the commerce and industry of the nation require.

So far as the immediate or early accomplishment of important economies is concerned, the restrictions of the act with respect to reduction in the number and compensation of railroad employees will probably constitute serious obstacles. They will not prevent, however, thorough exploration of the possibilities in the way of economies, and the information thus gained is bound eventually to be of value. Nor will they interfere in any way with the research and study, looking to further legislation of a more permanent and enduring character, for which the act provides.

No information can at present be given out as to the organization of the work of the co-ordinator, but that matter is under active consideration and it is expected that definite information will be available at an early date.

One of his first actions will be to designate the grouping of the carriers into eastern, southern and western groups, for which the railroads are to select regional co-ordinating committees. The powers of the co-ordinator are not very specifically defined in the law; he is authorized to issue "such orders," accompanied by "appropriate directions" as he shall find to be consistent with the public interest, in carrying out the stated purposes of the act, and the law provides that he and his assistants and agents shall at all times have access to the accounts, records and memoranda of the carriers. The theory is that recommendations will be made to him by the regional committees in case federal authority is needed to carry out plans they have agreed upon, and also that he will make suggestions to them which he may also put into effect by order if they fail to act on something upon which he is of the opinion that they should have acted.

Mr. Eastman has been a member of the Interstate Commerce Commission since February, 1919. He was originally appointed by President Wilson and was re-

appointed on the expiration of his term by President Harding in 1922 and again by President Hoover in 1929. He was born June 26, 1882, at Katonah, N. Y., and graduated from Amherst College in 1904, after which he held the Amherst College fellowship at South End House, a social settlement, in Boston, Mass. From 1906 to 1913 he was secretary of the Public Franchise League, at Boston, and in 1913 and 1914 served as counsel for employees of various street railway companies in wage arbitration cases. From 1915 to 1919 he was a member of the Massachusetts Public Service Commission by appointment of Governors Walsh and McCall.

At the time of his reappointment to the Interstate Commerce Commission in 1929 by President Hoover the White House made public a list of nearly 500 names of his endorsers, including a score of railroad officers and attorneys, 36 Senators and Representatives, 7 former members of the commission, 20 labor organizations, and many state railroad commissions, representatives of shippers' organizations and practitioners before the commission. He is classified as independent in politics. He has taken an active part in practically all branches of the commission's work and as a member of Division 4 has been particularly active in the handling of cases on the Finance Docket. His assignments to cases on the commission's docket have also placed him in particular charge of some of the most important class rate revision cases, the depreciation case, and cases involving joint rates and through routes in connection with inland waterways. For several years he has been chairman of the commission's legislative committee and has represented the commission in appearing at hearings before Congressional committees, and this work has given him an active participation in the formulation of legislation.

An Advocate of Government Ownership

Mr. Eastman has long been an advocate of government ownership of railroads, although not for some of the reasons most frequently advanced by government ownership advocates, but he has never urged any plan for either immediate or early public ownership and operation and has recently indicated on several occasions that he did not consider the time ripe for such a change. In 1920 he declined election as chairman of the Interstate Commerce Commission, shortly after the enactment of the Transportation Act, on the ground that he was not in sympathy with some of its principles, and in Title II of the new law, which is permanent legislation, he has witnessed a repeal of the recapture and rate-making provisions of the 1920 law which, as chairman of the commission's legislative committee, he has long worked to accomplish.

In an address in November, 1931, he said that because of its magnitude, public ownership would be an undertaking which ought not to be contemplated without most careful preparation and planning and that "there has been nothing of the kind"; therefore he was "not ready to advise that steps be taken toward public ownership and operation of the railroads." More recently, before the Senate committee, he said that while he had expressed the opinion that "it should be possible for the government to operate the railroads under a proper system as efficiently as they have been operated in the past, and probably a little more efficiently, taking the whole history of the railroads into consideration," he thought also that "there are disadvantages in government ownership." When it comes to the question as to whether the government shall take over the railroads at the present time, he said, "I see many difficulties in the way because of the uncertainty of the future of the railroads and the question of what price shall be paid for those properties, and also the fact that the roads are becoming much more than they have been in the past only a part of the entire transportation system."

Known as Industrious Worker

Mr. Eastman is well known as one of the most industrious members of the commission, putting in long hours at his work, and has undoubtedly exercised an important leadership in its actions. Although he has a reputation of being a great "dissenter" his separate dissenting or partially concurring opinions appended to commission reports have often contained ideas that later found reflection in the majority opinions. With a keen mind, persistence, industry, and thoroughness, he has acquired a remarkable grasp of the many-sided problems with which the commission and the railroads have been confronted, and this, together with the fairness of his attitude in presenting controversial questions, particularly before Congressional committees, have won for him general respect and admiration to which his personality has contributed.

While often criticized by railroad men on the ground that he was too inclined to deal with the railroads as if the government actually owned them, his attitude toward them during the years of their recent adversity has brought about a change in some quarters and in the recent discussions of the proposed legislation his prospective selection for the office of co-ordinator and to take charge of making plans for bringing about an improvement in the transportation situation has met with very general approval.

Right to Fair Return Defended

(Continued from page 898)

crease or stimulate commodity prices in the interest of improving the general economic situation.

The President states clearly that the purpose of the Administration is to increase commodity prices to a point where they will not be depressed below the level of prices existing at the time indebtedness was incurred. It must reach a level of this kind if those who have borrowed money are to repay that money in the kind of dollar they borrowed. This must mean, in effect, the restoration of commodity prices to a basis which will represent an average price of the period 1920 to 1930. If commodity prices are brought to such a level, there will be no great disparity between freight rates and such prices.

In making this statement we are not to be understood as conceding that there is any inevitable or logical relation between freight rates and commodity prices. In another part of this brief we have endeavored to show that the railroads are, as a matter of constitutional right, entitled to a fair return upon the value of their property devoted to the public service, irrespective of the rise or fall of prices. What we are saying now is that even conceding for the purpose of the argument that freight rates and commodity prices should be in some way related, we have the assertion of the President of the United States, backed by the support of Congress and supported by a great body of patriotic public opinion, that commodity prices will be put back to where they were in the ante-depression period. We do not mean that they will be reflated to a point which will mark the peak of prices in the highly speculative period just before the collapse, but we do say that the Administration has undertaken, and will no doubt succeed, to restore to commodities the value which they enjoyed in the decade 1920 to 1930, taking the average of that time as the objective.

If we are correct in this assertion, certainly the process will not be helped by the deflationary act of reducing freight rates at a time when commodity prices have begun a decided upward swing. The effect of such reduction would be to bankrupt the railroads, render their securities of small value, make it impossible for them to retain their credit, cause them further to retrench in their expenditures, lead to additional unemployment in the field of railroad labor, cause them to be less able to assume a policy of purchasing, and in every way add to the present unhappy condition of the country.

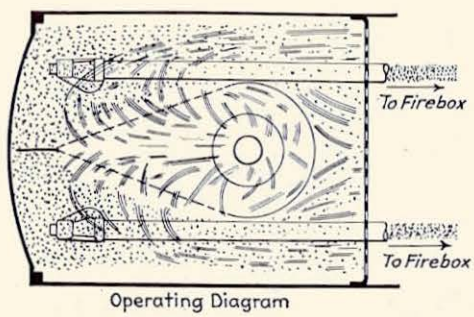
Draft Appliance Reclaims Cinders

Arrangement reduces resistance to gas flow, prevents emission of cinders from the stack, and returns them to the fire

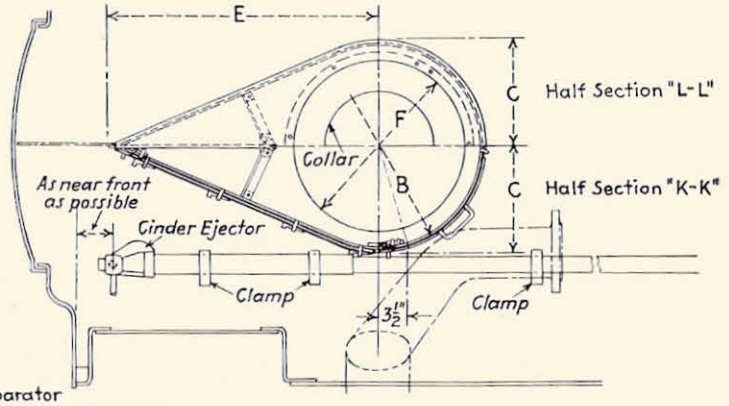
A LOCOMOTIVE front-end arrangement which is designed to retain all cinders in the front end and return them to the firebox for complete combustion has been developed by the J. S. Coffin, Jr., Company, Englewood, N. J. The equipment, which is known as the Superdraft, consists of a separator, through which the front-end gases pass freely to the stack and from which the cinders are diverted by their own inertia, and two steam ejectors by which the cinders are picked up from the bottom of the smokebox and returned to the firebox through return pipes which pass back through the barrel of the boiler.

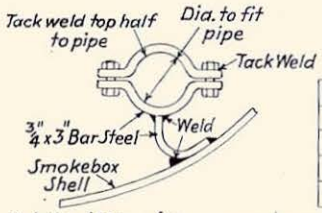
The separator replaces all baffle plates and netting as customarily employed in the locomotive front end. It is built-up of top and bottom plates and a frame of light vertical members to which solid and perforated plates are attached by the customary key-bolt fasteners. The top plates is suspended from the top of the locomotive front end and a tight closure about the extension stack is effected by means of a collar which is key-bolted in place. The nozzle extends up through the bottom plate, which is supported from the bottom of the front end by means of a sleeve which surrounds the nozzle base and by a vertical dividing plate which extends forward on the longitudinal center line of the front end, to which it is attached by welding. The enclosure of the separator back of the center line of the stack is a half cylinder of solid plate. The long streamlined surfaces in front of the center line of the stack and nozzle are closed with perforated plate. There are no other obstructions to the flow of gases from the tube sheet.

When the locomotive is in operation the gases and cinders from the tubes flow forward around the solid cylindrical back plate of the separator, the gases then being drawn through the oblique walls of perforated plate, while the cinders continue toward the front end of the smokebox in a direction approximately parallel to the surfaces of the netting, to fall at the bottom of the smokebox. Here they are picked up by steam-operated ejectors, which blow them back through 2½-in. return pipes to the firebox. The return pipes pass through 3½-in. boiler flues and terminate from ½ in.



Operating Diagram

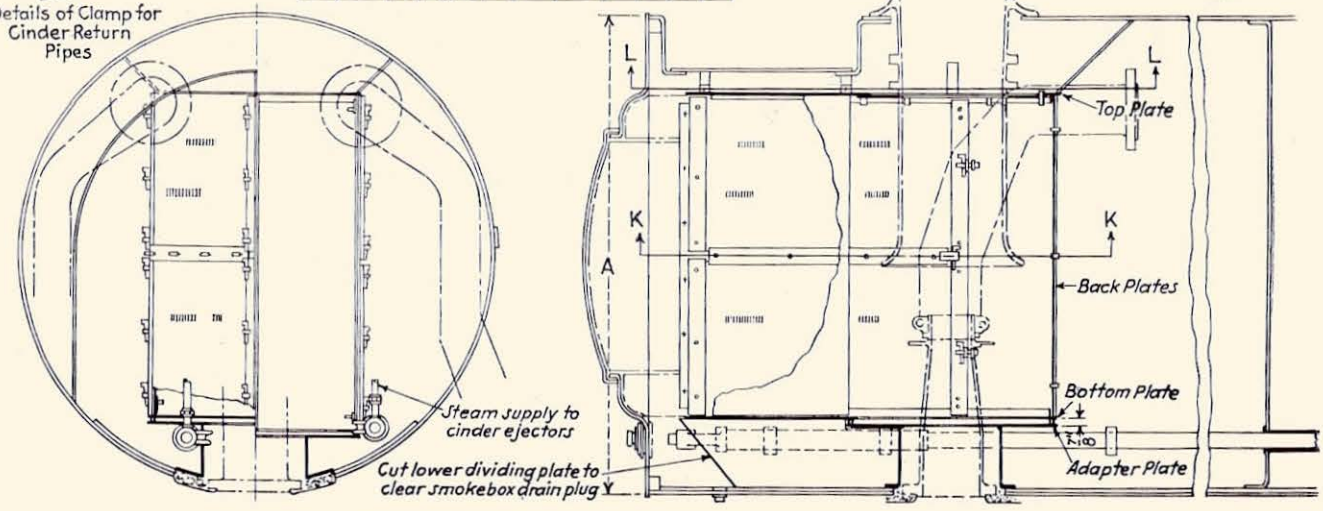




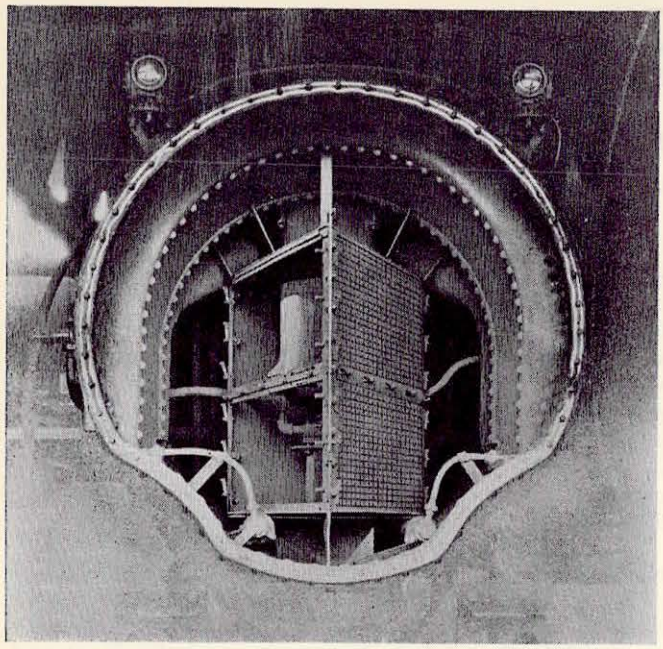
Details of Clamp for Cinder Return Pipes

Dimensions of Separator

Line	A	B	C	E	F	Line	A	B	C	E	F
						4	80"-95"	36"	18⅝"	47¾"	30"
1	50"-65"	24"	12⅝"	32¾"	18"	5	90"-100"	40"	20⅝"	52⅞"	34"
2	60"-75"	28"	14⅝"	37½"	22"	6	95"-105"	44"	22⅝"	58"	38"
3	70"-85"	32"	16⅝"	42⅞"	26"						



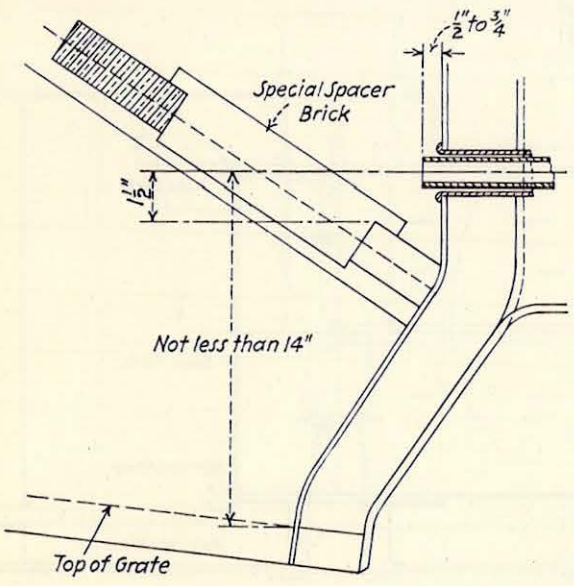
Arrangement and Functioning of the Locomotive Superdraft



Location of the Separator and Ejectors in the Front End

to ¾ in. inside the rear tube sheet. A special spacer brick is provided in the arch just back of each tube to permit the cinders to fall through to the fire.

In the performance of its primary functions of preventing the discharge of cinders from the stack and reclaiming the heating value of cinders which pass into the front end, the Superdraft equipment possesses a number of other advantages. Since the clearing of the front end is no longer a function of the drafting equipment, high gas velocities are unnecessary and the separator itself offers very little resistance to the flow of gases to the stack. The relation of the cinder flow to the separator is such that only a small portion of the cinders come in contact with the screen or perforated plate and then parallel to the surface rather than against it, which materially reduces the netting wear. This also reduces the tendency of the netting to plug. As a further precaution in this respect and also to prevent any water dripping from the stack getting into the front end a water-tight rim is placed about the edge of the bottom plate of the separator and any water which drips onto the plate drains into a water-tight well inside the sleeve support which surrounds the exhaust pipe. Such water as accumulates here is evaporated when the smokebox again becomes hot.



How the Cinders Re-enter the Firebox

The high draft efficiency and elimination of cinder losses is said to result in a substantial increase in locomotive efficiency. Other advantages are the elimination of fire losses to railway and other adjoining property, reduction in the cost of cleaning ballast and greater comfort and cleanliness both for passengers and employees.

Motor Cars in Railway Police Service

A METHOD of railway police protection, known as the "Motor Patrol," has been developed on the Indiana Harbor Belt under R. J. Edgeworth, superintendent of police, who originated the idea and has brought it to a high degree of efficiency. Using a number of small gasoline railway motor cars, the police department of the I. H. B. has been effective in reducing pilferage and theft. The "Motor Patrol" was organized two and one-half years ago. During this time, the cars have been in constant use, each operating from 18 to 24 hr. and traveling about 200 miles a day.

R. J. Edgeworth, Superintendent of Police of the Indiana Harbor Belt, and One of the Motor Cars Used by His Officers

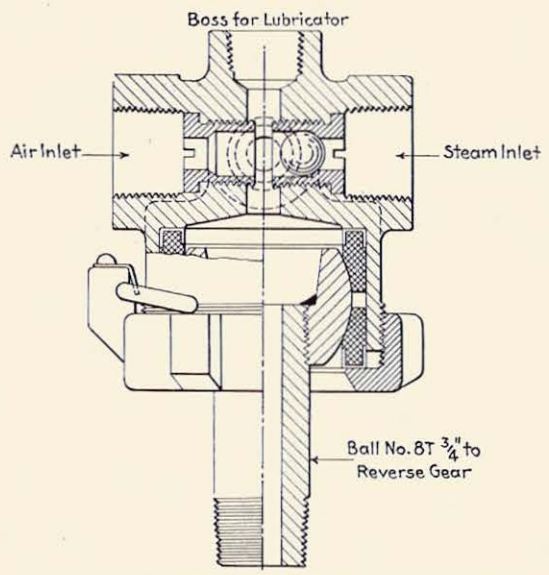
Previously, train service and automobiles were used by the officers in patrolling the lines, and there were consequent delays in waiting for trains and in reaching many points on the line not adjacent to automobile roads. By using the light, flexible motor cars, it has been found possible to patrol the lines more effectively. The officers are now constantly on the right-of-way, and the property is afforded better protection through the ability of the officers to make more frequent and rapid trips over the line and to respond to emergency calls more quickly.

The cars in use are of the air-cooled, two-cylinder, free-running, four-cycle type, which operate in both forward and backward directions at equal speed. For this special service, the cars have been equipped with gun cases for firearms, as well as with electric lights for night service, warning gongs and other safety devices.

Barco Ball-Check Reverse-Gear Joint

A LARGE majority of the power reverse gears which have been applied to locomotives throughout the country up to the present time are equipped with single inlets required for air operation, whereas a new ruling, recently issued by the Interstate Commerce Commission, specifies that all power reverse gears must be equipped with separate air and steam supply pipes.

To assist railroads in meeting this requirement, the Barco Manufacturing Company, Chicago, has developed a new joint, known as the Barco Type 7T-8T, equipped with a heavy forged-steel ball so that no breakage can occur at the threaded end, where it screws into the reverse gear. The casing end is provided with separate air and steam inlets, and a monel metal ball and ball seats between these two inlets. It is further provided with a boss into which the lubricator may be screwed, so that



Barco Flexible-Joint Ball-Check Reverse-Gear Joint

the same lubricator will lubricate the reverse gear with both air and steam.

The I. C. C. requirements are that the reverse gears must be tested with steam at least once every 30 days, and this is generally understood to mean that steam must be shown passing into the valve chamber of the gear but not necessarily into the cylinders, where it would, to some extent, injure the packing. In the Barco joint design, a boss is provided into which a pet cock is screwed so that, in making this test, the simple operation of opening the pet cock will indicate whether or not steam is passing into the valve chamber.

The use of this joint on a power reverse gear eliminates the necessity of providing two separate flexible joints and two line check valves in the air and steam lines, as commonly applied. In addition, one T-fitting, required to accommodate the lubricator, is saved. This construction also saves drilling and tapping the valve chamber for a pet cock, as the pet cock may be screwed directly into the boss provided for it on the Barco joint. The use of the Barco ball-check, reverse-gear joint, therefore, combines several functions in a single fitting and contributes substantially to simplify the construction and piping necessary to meet the new I. C. C. requirements covering power reverse gear installations.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended June 10 totalled 564,546 cars, an increase of 56,312 cars over the total for the preceding week, which had included a holiday, and also of 62,861 cars, or 12 per cent, as compared with the corresponding week of last year. As compared with 1931 this was a decrease of 167,863 cars. This is the fifth consecutive week in which carloading has exceeded last year's figures. All commodity classifications except merchandise l.c.l., showed increases as compared with last year and all but coke showed increases as compared with the previous week. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, June 10, 1933

Districts	1933	1932	1931
Eastern	131,330	114,574	161,801
Allegheny	108,334	96,411	146,356
Pocahontas	39,352	29,983	44,948
Southern	85,882	75,901	110,410
Northwestern	71,891	61,250	101,548
Central Western	78,249	78,978	106,062
Southwestern	49,508	44,588	61,284
Total Western Districts	199,648	184,816	268,894
Total All Roads	564,546	501,685	732,409
Commodities			
Grain and Grain Products	35,917	24,627	30,959
Live Stock	15,801	15,219	18,101
Coal	87,944	66,836	106,410
Coke	4,440	2,647	5,462
Forest Products	24,352	17,074	30,546
Ore	9,973	3,141	27,614
Mdse. L. C. L.	167,996	176,485	218,716
Miscellaneous	218,123	195,656	294,601
June 10	564,546	501,685	732,409
June 3	508,234	447,412	761,084
May 27	541,309	521,249	711,249
May 20	531,618	515,628	754,738
May 13	531,095	517,260	747,057
Cumulative total, 23 weeks	11,415,045	12,602,148	16,854,398

The freight car surplus on May 31 was 552,781 cars, a decrease of 29,175 cars as compared with the number on May 14. The total included 281,454 box cars, 203,628 coal, 30,860 stock, and 12,910 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended June 10 amounted to 40,824 cars, which was an increase over the previous week's of 1,938 cars, and the index number of the Dominion Bureau of Statistics rose from 61.59 to 65.63. This is the highest index number for the past thirty-four weeks. Heavy loading of grain in the western division has been the chief factor in the very favorable showing for the last two weeks. The grain in country elevators was the heaviest on record for this time of the year and there is still over 97 million bushels in store, the greater part of which must be forwarded to make room for the new crop. Merchandise increased 526 cars over the previous week and the index number rose from 68.04 to 71.98. Miscellaneous freight also showed a gain of 265 cars, but is still light. Lumber has been improving slowly but fairly steadily for the last nine weeks; 1,667 cars for the week was the heaviest loading this year and was exceeded only twice in 1932.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
June 10, 1933	40,824	18,624
June 3, 1933	38,886	17,151
May 27, 1933	32,361	17,760
June 11, 1932	43,686	17,640
Cumulative Totals for Canada:		
June 10, 1933	785,178	400,688
June 11, 1932	956,536	478,072
June 6, 1931	1,104,243	643,927

Motor Transport Section

Joint Service Proves Satisfactory and Economical

Reading Transportation Company and Pennsylvania Greyhound Lines complete third winter of pooled Philadelphia-Atlantic City operations

THE economies which can be obtained, without impairment of service, by the pooling of operations on parallel and competing motor coach lines have been clearly demonstrated during the last three winters by the Reading Transportation Company, highway subsidiary of the Reading, and the Pennsylvania Greyhound Lines, motor coach operating affiliate of the Pennsylvania. The experience of these two companies in providing motor coach service between Philadelphia, Pa., and Atlantic City, N. J., leaves no doubt of the savings which can be made by pooled operations, and proves also that such pooled service can be carried on, season after season, with harmony between the companies involved and without lowering the standard of motor coach service demanded by passengers in highly competitive territory.

Heavy Volume of Traffic

Passenger traffic between Philadelphia and the seashore of Atlantic City has long been heavy in volume. Originally developed by high-speed railway service, with departures every hour, it has been increased still further by the construction of excellent highways, over which there is a heavy movement of automobile and motor coach traffic. With the bulk of the passenger traffic movement of an interstate character—that is, from Pennsylvania to New Jersey and vice versa—the Philadelphia-Atlantic City run has been especially attractive to motor bus lines since no permission to operate has to be secured from regulatory authorities. Thus, an unusually large number of motor coach lines have been operating over the Philadelphia-Atlantic City highways for a number of years, and the nature of the competition —both rail and highway—and the volume of the available traffic has been such as to require a high frequency of service, with schedules virtually every hour throughout the day from early in the morning until late in the evening.

Hourly Service Necessary

When the Reading and the Pennsylvania began to supplement their Philadelphia-Atlantic City train service with motor coach service, therefore, they found it necessary to run their highway equipment on hourly schedules, too, in order to be at all successful in competition with the independent bus lines. Such frequency of service was amply justified during the summer months, when the peak of traffic is reached, with a volume of business sufficient to cause a high load factor on the motor coaches operating hourly from each terminal. During the remaining months of the year, however, traffic, while substantial, is not unusually heavy, so that the railway motor

One of the Reading Transportation Company Motor Coaches Which Has Operated in the Philadelphia-Atlantic City Joint Service

coach lines, compelled to operate an hourly service in order to attract any business at all from competitive bus lines, were ordinarily unable to secure adequate loads for their equipment.

Until the fall of 1930, both the Pennsylvania Greyhound Lines and the Reading Transportation Company continued to operate their regular service of 8 to 10 scheduled round trips daily between Philadelphia and Atlantic City. Late in that year, however, the proposal was made that a joint service be operated by the two companies, maintaining the usual hourly service, but relieving each company of half of the burden of bus mileage operated. An agreement was soon reached as to how the plan could be carried out, and the joint service has been successfully maintained during the off-season months ever since.

Under the arrangement in effect, half of the service between Philadelphia and Atlantic City is operated by Reading equipment and half by Pennsylvania Greyhound equipment. During the winter months, when eight round trips daily are operated by the two companies, the Reading takes care of four schedules and the Pennsylvania Greyhound a like number. On May 1, with an increase in the service to 10 round trips daily, each company takes care of an additional daily round trip schedule.

All Coaches Start at Reading Terminal

All motor coaches outbound from Philadelphia, whether Reading or Pennsylvania Greyhound equipment, start from the Reading Terminal and proceed to the Broad Street station, since traffic regulations in Philadelphia tend to slow up movements in the opposite direction. After taking on passengers at the Reading Terminal, the coaches proceed to the Pennsylvania's Broad Street station where the remaining Philadelphia passengers are loaded. The coaches then continue to Atlantic City, stopping there first at the Pennsylvania railroad station where such passengers as wish to leave the coaches at that point are discharged and then proceeding to the Reading railway station where the remaining passengers get off. In the reverse direction, for traffic moving to Philadelphia from Atlantic City, coaches start from the Reading station at the shore, proceed to the Pennsylvania station and then make the run to Philadelphia. Inbound coaches at Philadelphia may stop first either at the Reading Terminal or Broad Street station. On the three express schedules operated daily from Atlantic City to Philadelphia, the first stop is made at the Reading Terminal and the second stop at Broad Street station, since faster time can be made in this way. On the remaining seven runs, however, the coaches stop first at Broad Street station and then proceed to the Reading Terminal.

For convenience, and to carry out the idea of service "every hour on the hour," departure times from both Atlantic City and Philadelphia, as shown in the timetables of each company, are identical, although obviously departures from the Pennsylvania station are somewhat later actually than those from the Reading station. Arrival times, however, are different by five minutes in the timetables of the two companies. In each case, of course, the companies' individual timetables show all schedules, whether operated by the Reading Transportation Company or the Pennsylvania Greyhound Lines. From the standpoint of the public, it is one service.

Reserved Seats on All Coaches

The task of handling passengers from two stations without inconvenience or prejudice to those in either station has been simplified by the fact that all seats in the Philadelphia-Atlantic City motor coaches are reserved.

When a passenger buys a ticket, he is assigned to a seat and no other passenger may occupy it. Thus passengers who board the coach at the starting station cannot monopolize the choice seats, leaving the less comfortable ones to the passengers getting on at the second stop. Tickets bearing the seat numbers in the coach for each run are bound into books and these are divided in half, one half, representing the seats on one side of the coach, going to the Reading Transportation Company for sale at its ticket windows, and the other half going to the Pennsylvania Greyhound Lines for sale at the ticket windows of that company.

The joint service is flexible in the extreme to accommodate sudden changes in the traffic volume. An open telephone line is maintained between the dispatchers' and ticket offices of the two companies, so that each office is constantly in touch with the volume of business to be handled at each terminal. Similarly, each ticket office can arrange for seats in addition to those regularly assigned to it after its own supply of seats has been exhausted. Thus, the Pennsylvania Greyhound ticket agent calls the Reading ticket agent for additional space assignment when his half of the coach is sold out, and the same applies if the Reading side of the coach is sold out first.

Service Highly Flexible

Likewise, an unusually heavy volume of traffic, requiring the running of an extra coach, is taken care of without difficulty. For example, the Pennsylvania Greyhound ticket office may find shortly before the departure time of a motor coach that more seats will be required on the run than can be supplied by its regularly assigned space and the extra space released by the Reading from its quota. In such a case, the Pennsylvania Greyhound ticket agent or dispatcher advises the Reading that his station will require an entire coach for that schedule, which will be an extra, and that the Reading is free to sell all seats in the regular coach. In such cases, the extra coach is run directly from Broad Street station without stopping at the Reading Terminal and the regular coach may or may not stop at Broad Street station after leaving Reading Terminal, depending upon whether passengers with seats reserved in it are waiting at the second station.

Ordinarily the extra coaches are run by the company whose station requires this extra space, but this is not always true. An essential feature of the joint arrangement is that each company shall operate the same number of revenue bus miles in each period. Thus, if during one week the Pennsylvania Greyhound Lines operate an unusual number of extra coaches, piling up an excess of revenue motor coach miles over those operated by Reading equipment, extra schedules operated during the subsequent week, even though they may be entirely from the Pennsylvania Greyhound station, will be operated by Reading equipment. In this manner, equal division of the revenue bus miles operated by the two companies, automatically arranged for by the equal division of regular schedules, is provided even during seasons when many extra schedules have to be run.

Division of Regular Runs

Division of the regular schedules between the two companies is not on an "every other schedule" basis. It happens that the Pennsylvania Greyhound Lines do not have adequate garage facilities at Atlantic City for the over-night storage and inspection of motor coaches,

while such facilities are owned by the Reading Transportation Company, which has rather extensive motor coach lines in the vicinity of Atlantic City. Consequently, the first two schedules out of Atlantic City each morning are run by Reading equipment, which has tied up over-night at that point. The remaining schedules are divided in such a manner as to facilitate operations and to avoid unduly long layovers at either terminal. Of the schedules from Philadelphia, the Reading operates those leaving at 9 a.m., 10 a.m., 12 noon, 4 p.m. and 9 p.m., all daylight-saving time, while the Pennsylvania Greyhound Lines operate those at 8 a.m., 2 p.m., 3 p.m., 5 p.m., and 7 p.m.

In the opposite direction, the Reading Transportation Company operates the schedules from Atlantic City at 7 a.m., 9 a.m., 1 p.m., 3 p.m., and 7 p.m., while the Pennsylvania Greyhound protects the runs at 11 a.m., 5 p.m., 6 p.m., 9 p.m., and 11 p.m. The 60-mile run between Philadelphia and Atlantic City is made in exactly 2 hours by coaches operating on the express runs, and in from 2 hrs. 10 min. to 2 hrs. 15 min. by coaches making local stops along the way.

Savings Have Been Substantial

The actual savings in bus miles accomplished by the pooling of Reading and Pennsylvania Greyhound motor coach service between Philadelphia and Atlantic City have been variable, depending upon the number of extra schedules which have had to be run. However, on the basis of winter schedules when eight round trips daily have been run, each company normally has saved four round-trips per day, or a total of 480 bus miles. This increases to 600 bus miles per day when the service is stepped up to 10 round trips daily on May 1. Ordinarily the joint basis of operation is discontinued during the summer months when the traffic volume is sufficiently heavy to justify the operation of hourly motor coaches by each company. This year, the joint service is expected to be terminated for the summer before the first of July.

Joint Arrangement May Become Permanent

The possibility that the joint service will be made permanent in the relatively near future is raised by the fact that the Pennsylvania and the Reading railway lines in southern New Jersey were recently authorized to consolidate, and this consolidation may be extended to the motor coach operations of the two railways. Whatever may be done, however, the joint operations of the Reading Transportation Company and the Pennsylvania Greyhound Lines during the past three winters have proved the benefits, in economy and in increasing the load in motor coaches operated, to be derived from pooling parallel and competitive operations during periods when the traffic is not moving in peak volume.

Stewart Announces Three New Truck Models

THREE new motor truck models, of one ton, one and one-half tons and two tons capacity, have been announced by the Stewart Motor Corporation, Buffalo, N. Y. All three of the trucks are powered with six cylinder engines, the engine in the one-ton model developing 56 h.p., that in the one and one-half ton model 62 h.p. and that in the two-ton model 65 h.p. Full pressure feed lubrication, removable cylinder heads and blocks, connecting rod bearings of the integral cast-in type, and centrifugal water pumps and thermostats are features of the engines with which these trucks are equipped.

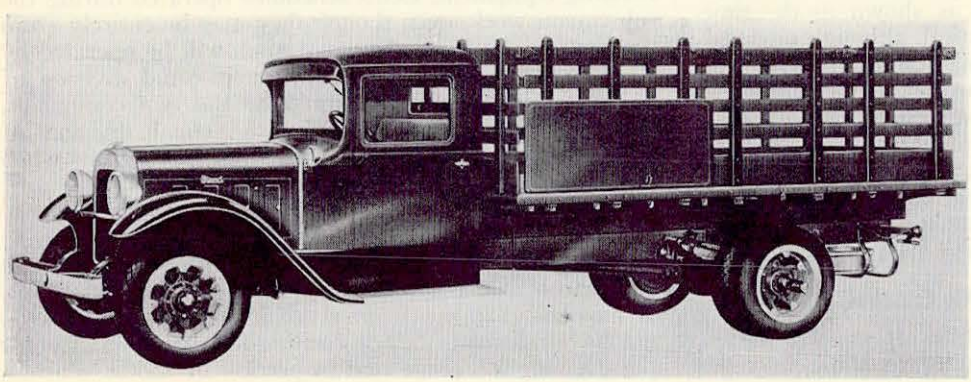
Equipment of Engines

The engines have carburetors of the down-draft type, battery type ignition with engine driven distributor, and single dry plate clutches, equipped with vibration dampeners. The transmissions are of the unit power plant type, with four speeds forward and one in reverse, the transmissions being bolted directly to the bell housing on the engines. The Ross cam and lever type of steering gear is employed on all three models.

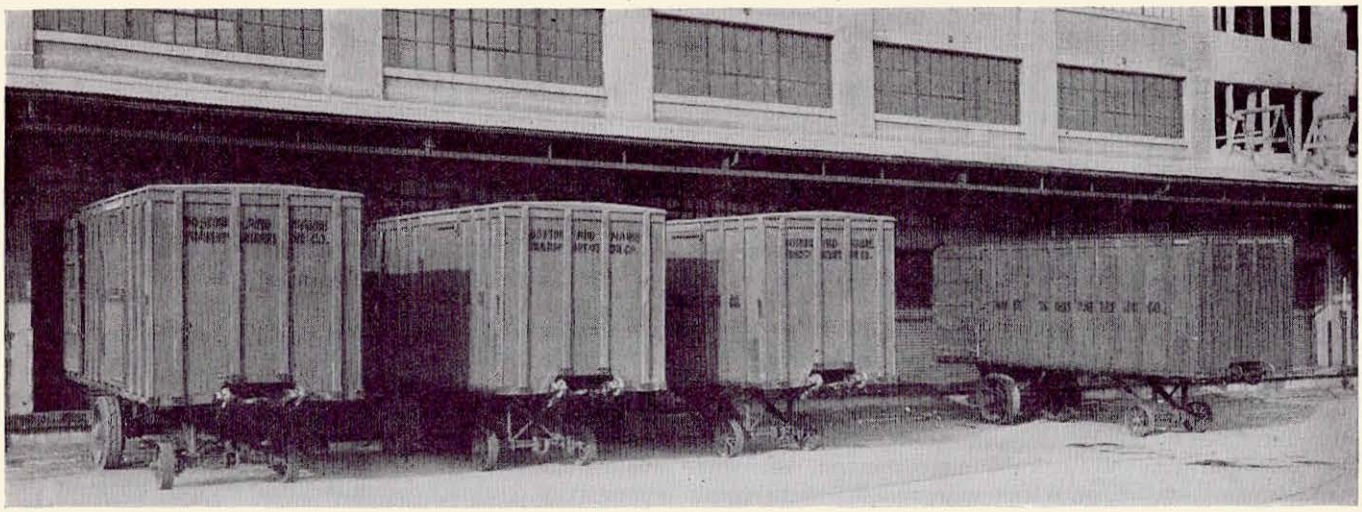
The front axles are of the I-beam type, drop forged and with heavy knuckles, the hubs being equipped with Timken roller bearings. The rear axles are of the truck type, with single piece, heavy cast steel housing and with spiral bevel gear with straddled mounted pinion. The heavy differential is mounted on Timken roller bearings. The front springs are 38½ in. long and 2¼ in. wide, the bronze bushings having ¾-in. diameter spring pins. The rear springs are 50 in. long and 2½ or 3 in. wide, depending upon the model. Service brakes are of the four wheel Bendix Duo-Servo type, mechanically operated by the foot pedal.

Chassis Weights and Load Space

The wheelbase of the one-ton Stewart is 134 in., although a special wheelbase of 145 in. is available. The standard wheelbase of the one and one-half ton model is 134 in., with special wheelbases available of 145 in., 160 in. and 176 in. The standard wheelbase of the two-ton model is 145 in., with special wheelbases of 160 in., 176 in. and 190 in. provided. The chassis weights of the new Stewart trucks are 2,925 lb. for the one-ton model, 3,250 lb. for the one and one-half ton model, and 4,350 lb. for the two-ton model. The load space back of the driver's seat on the one-ton truck is suitable for an 8-ft. or 9-ft. body, depending on the wheelbase, while bodies from 8 ft. to 12 ft. in length can be used on the one and one-half ton truck, and bodies from 8 ft. to 14 ft. in length can be used on the two-ton truck.



The New Model 44X—
1½ Ton Stewart



B. & M. Transportation Company Semi-Trailers at Freight House "A" in Boston, Mass.

Boston & Maine Truck Operations Continue Profitable

Traffic maintained at good volume throughout 1932—Business currently taxing capacity of available equipment

IN spite of the low level of general business in 1932, the truck operations of the Boston & Maine Transportation Company, highway subsidiary of the Boston & Maine, continued to maintain the good record of previous years, showing a substantial profit. Although business last year remained at a fairly low ebb through the month of July and previous months, there was a substantial increase in the traffic volume beginning in August and reaching a peak in October, which gave the company a substantial margin of revenue over expenses. Freight traffic declined somewhat during the first four months of this year, but there was a marked increase in business in May. Although the figures of revenues and expenses for May, 1933, are not yet available, there is every indication that they will show a volume of traffic comparing favorably with that in the peak month of 1932. During May of this year, the chief problem of the transportation company management was to find sufficient equipment to handle the available traffic.

The accompanying tabulation shows freight revenues of the Boston & Maine Transportation Company, together with the expenses of handling this traffic, month by month, throughout 1932 and for the first four months of 1933. In the last column is the monthly tabulation of tons of revenue freight handled.

Evidence of the rigid control of expenses which marks the operations of the Boston & Maine Transportation Company is to be found in the comparison of monthly revenues and expenses of the motor truck operations. While freight revenues during 1932 ranged from as low as $56,317.38 to as high as $77,194.34, expenses were held to an amount less than revenues in every month except one—the month of June, 1932—when expenses were approximately $230 in excess of revenues. In each of the first four months of this year, likewise, revenues exceeded the expenses.

Two Types of Truck Operation

The truck operations of the Boston & Maine Transportation Company are of two types. First, there are the truck operations in replacement of train service, in which the transportation company is a trucking contractor of the railway, substituting truck service for railway service. Second, there are the commercial trucking operation of the transportation company for its own account. Recognizing the difficulty of keeping certain traffic on the railway for distances up to 100 miles, the Boston & Maine adopted the policy of having the transportation company engage in commercial trucking over distances of this sort, in cases where it appeared that

Freight Traffic Statistics, Boston & Maine Transportation Co.

1932	Revenue	Expenses	Tons Handled
January	$64,559.75	$63,256.48	18,185
February	67,638.32	66,260.61	19,087
March	68,868.32	67,571.27	20,028
April	59,582.61	58,341.65	17,485
May	56,317.38	56,101.77	15,638
June	59,527.98	59,757.35	16,595
July	56,340.91	56,330.29	16,045
August	70,732.10	67,293.71	20,952
September	75,738.85	70,428.06	24,061
October	77,194.34	73,603.77	24,090
November	64,896.70	63,434.11	19,538
December	61,621.25	61,560.49	17,488
Total	$783,018.51	$763,939.56	229,192
1933			
January	$58,609.22	$57,544.99	16,721
February	56,079.25	54,168.02	16,274
March	63,291.18	61,152.27	18,612
April	58,097.95	55,548.30	18,013
Total	$236,077.60	$228,413.58	69,620

operations could be developed which would be profitable. In a few cases, such operations were started largely for defensive reasons, with the expectation that a profitable volume of traffic could be developed in the long run.

The train-replacement truck operations of the transportation company are fairly general throughout the Boston & Maine territory. Generally speaking, trucks have been substituted for train service for reasons of economy. Savings have been accomplished by reductions in train-miles and in overtime, by the extension of local freight train runs, by the closing of transfers and by the reduction of terminal switching and car per diem. In addition to the economy, good results have been secured also through the speeding up of the traffic movement. The effect of such acceleration of traffic has been particularly favorable in connection with the movement of traffic for which independent trucks compete with the railway.

Truck Lines Radiate from Concentration Points

Virtually all the truck lines on which Boston & Maine railroad freight is carried radiate from concentration points, the most important of which are Boston, Mass., Lawrence and Holyoke. At Boston, there is the greatest concentration of truck equipment used by the transportation company. This includes a fleet of trucks, tractors and semi-trailers which is engaged in the transfer of freight to and, in one case, from connecting lines; in "ferry-car" service by trucks to and from industries in the suburban areas; and in hauling freight in both directions between Boston and stations within a 15-mile radius of the city.

The kinds of truck service performed at Lawrence are similar to those at Boston, except that there is no transfer to or from connecting lines. On account of the nature of the work performed at Lawrence, no semi-trailers are used, only motor trucks being in service. Boston & Maine railroad freight is handled on fixed truck routes centering at Lawrence, and "ferry truck" service is provided to 14 industries within a four-mile radius.

At the Holyoke concentration point, there are extensive truck operations which serve 3 stations and 16 industries in Holyoke and 3 stations and 6 industries in Springfield, which is 8 miles distant. Both Holyoke and Springfield receive and forward a number of through-merchandise cars, so that there is a considerable freight movement by truck between the two stations. Outbound freight originating at the smaller stations in this district is trucked to whichever of the two larger stations has available the better outbound merchandise car service. Smaller truck concentration points, at which railroad freight is handled, are located at Salem, Mass., Dover, N. H., Biddeford, Me., Rochester, N. H., Lowell, Mass., Manchester, N. H., Goffstown, Lakeport, White River Junction, Vt., Claremont Junction, N. H., Keene, Fitchburg, Mass., Gardner, Greenfield and North Adams.

Method of Operation

The operations at each concentration point are quite similar. Trucks leave the concentration point in the morning with freight unloaded from cars which have arrived during the previous night, and return in the afternoon with freight which has originated at stations on the truck routes and which is forwarded in freight cars the same evening. One daily truck trip is made on the longer routes, on which the volume of traffic is relatively light, while two or more trips are made on the shorter routes where the volume of traffic is greater. Extra trucks handle overflow traffic when necessary.

In two cases highway service has completely replaced railroad service. The first is at Belmont, N. H., located at the end of a five-mile branch line. Since August, 1930, express traffic and all freight, carload and l.c.l., has been handled by motor truck between Belmont and Lakeport, a distance of seven miles by highway. The second complete substitution was made in June, 1931, on the New Boston branch, which is a five-mile line in New Hampshire. L.c.l. freight, express and mail are trucked to and from Manchester, a distance of 15 miles. Carload freight is trucked to and from Goffstown, seven miles from New Boston.

At the present time the transportation company is operating over more than 700 miles of highway in performing this truck service for the railway. In its commercial trucking operations, for its own account, the transportation company operates equipment over 296 miles of highway.

Contracts for Equipment

The Boston & Maine Transportation Company owns no trucking equipment, but contracts with independent trucking concerns, for the trucks, tractors and semi-trailers used. These concerns have contracts or agreements with the transportation company, and with all of them the transportation company's business either constitutes the major portion of their activities or takes precedence over any other business which they may do. Two trucking concerns furnish 80 per cent of the equipment used by the transportation company, and with each of them the railway subsidiary is the largest account. The trucking equipment is used interchangeably on both railroad freight and transportation company freight, with the result that freight of both types may be loaded on the same truck. One of the trucks may stop at the freight station in a town to unload and load railroad freight, and then may go to a store or mill in the same town to pick up or deliver transportation company freight. By this means, the greatest possible utilization of equipment is accomplished.

Up to the present time the Boston & Maine Transportation Company has played no part in the provision of pick up and delivery service for l.c.l. freight, as now provided by the Boston & Maine on railroad traffic between certain points. The truck service necessary to accomplish this pick up and delivery work has been arranged for directly by the Boston & Maine with trucking contractors. However, a change in this procedure is now anticipated.

On account of the efficient manner in which it has performed truck service for the railroad and has developed traffic for its own account, and because of the consistently profitable volume of business which it has secured—to say nothing of the savings in operating expenses which it has made possible by the reduction in train service on the railway—the Boston & Maine Transportation Company is considered to be one of this country's outstanding examples of successful railroad-truck operation.

FLOWERING PLANTS to the number of 45,000 have been distributed this spring by the greenhouses of the Canadian National at Moncton, N. B.; these greenhouses serving the stations of the system in Nova Scotia, New Brunswick and Prince Edward Island. This number is 5,000 above the total of shipments made last year, the enthusiasm of the station agents and their wives being such that every year shows an increase in the number of plants sent out. Geraniums are the most in demand.

NEWS

Rail Wage Cut Postponed at Administration Request

Eastman, acting unofficially, obtains agreement between carrier and labor representatives

Efforts of the railways to obtain a further reduction in wages have again been postponed, at the request of the Administration, expressed to the managements and the railway labor organizations by Commissioner Joseph B. Eastman, of the Interstate Commerce Commission, who is also federal co-ordinator of transportation but in this instance acted unofficially on behalf of President Roosevelt.

The railroad managers and the railroad labor executives on June 21 entered into an agreement under which the arrangement by which 10 per cent is being deducted from the pay checks of employees will be extended from October 31, 1933, until June 30, 1934, and under which the date on which either party can submit a notice in accordance with the provisions of the Railway Labor Act, indicating a desire to change the basic rates of pay, will be extended from June 15, 1933, to February 15, 1934. Under this agreement the railroads will surrender for a period of 8 months their right to seek a further reduction in employee compensation, and the employees will surrender for an equal period of time their opportunity to secure an elimination of the present 10 per cent deduction. The notice given by the railroads on June 15 of an intention to seek a 22½ per cent reduction in the basic rates of pay will be cancelled.

"This agreement has been reached because both the railroads and the employees wish to do nothing which would in any way embarrass or threaten the present policy of the Administration," Mr. Eastman said in making the announcement. They realize that the government has now embarked upon a wholly new policy designed to promote business and industrial activity and to further the general welfare. They appreciate that until the results of this policy can be more clearly determined, it will be difficult to deal wisely with this wage controversy, and that the active prosecution of such a controversy at the present time might have a most disturbing and unsettling effect. Neither side relinquishes in any way its views as to what the wages should be, but they have agreed to a postponement of the controversy out of deference to what they believe to be the desire and policy of the Administration, and in the general public interest.

"This agreement has been reached voluntarily in a spirit of cooperation, and I desire to express my very wholehearted appreciation of the attitude of both parties. They have been reasonable and amicable and they merit the commendation of the country."

Last fall the efforts of the railways to take up the question were postponed at the request of President Hoover but the 10 per cent reduction which had been in effect since February 1, 1932, was extended for another six months on condition that the railroads should not re-open the subject until June 15. Notices proposing the additional 12½ per cent reduction were issued last week by the conference committee representing the railways of which W. F. Thiehoff, general manager, eastern lines, Chicago, Burlington & Quincy, is chairman. In announcing his proposal to confer with representatives of the railroads and of labor on June 19 Mr. Eastman pointed out that this would not be done in his capacity as federal co-ordinator of transportation, for the law gives the co-ordinator no authority over wage controversies, but would be done "unofficially in the hope of promoting results which will be in the general public interest." He met on Tuesday morning with the railroad conference committee headed by Mr. Thiehoff and in the afternoon with the Railway Labor Executives' Association. On Wednesday he held short conferences with them again and the agreement was announced in the evening.

It was agreed that the members of the Railway Labor Executives' Association will recommend the approval of the agreement by the appropriate representatives of the employees members of their respective organizations in accordance with the laws of said organizations and that upon receiving such approval will thereupon notify the Conference Committee of Managers that its agreement has been so approved and is in full force and effect.

It was further agreed that unless the agreement is approved as provided on or before July 12 the parties signatory will meet on that date for conference as provided in the notices served by the railroads represented by the Conference Committee of Managers.

St. Louis Traffic Club Elects Officers

The following officers have been elected by the St. Louis Traffic Club for one year: President, Alex M. Field, traffic manager of the Wrought Iron Range Company, St. Louis, Mo., and the Southern Malleable Iron Company, East St. Louis, Ill.; vice-presidents, J. R. Hundley, F. P. Zimmerman, R. C. Trovillion, D. A. Noonan and W. C. Bergmann; secretary, Sherman E. Wilson; and treasurer, A. H. Killinger.

Calumet Sag Waterway Is Found Unjustified

Special board of army engineers has rendered unfavorable report on the project

The special board of army engineers, which had been appointed to investigate the proposed improvement of the Calumet Sag channel, near Chicago, to provide a connection for waterway traffic from the mouth of the Calumet river at Lake Michigan to the Illinois deep waterway, has reported unfavorably on this project. According to a notice of this unfavorable report, issued by the War Department, "The board is unable to find transportation savings which alone would justify the federal expense for the immediate consumation of such a plan. It concludes that justification requires substantial support from local interests. It recognizes that a considerable time is likely to be required for the crystallization of such support. The board recommends a moderate improvement of the Calumet-Sag channel as what it conceives to be a first step in the possible consumation of the more comprehensive and satisfactory plan."

This project had for its purpose the deepening and widening of the Calumet-Sag channel, a sanitary drainage channel constructed by the Chicago Sanitary District, together with certain other connecting streams for the purpose of providing a waterway cut-off to avoid the much longer route through the main channel of the Sanitary District and the Chicago river. This project was strenuously contested by the railways owing to the enormous expense in which they would be involved for the raising and replacement of bridges, for in addition to an estimated cost of $82,282,000 for the channel improvements, it was estimated that it would be necessary to expend $132,372,000 for the adjustment of 35 railway bridges and other facilities owned by 20 different carriers.

State Refusal to Permit Surcharges Found Discriminatory

The Interstate Commerce Commission has issued a report finding that the refusal of state authorities to permit the application to intrastate traffic of surcharges corresponding to those maintained on interstate traffic, in North Carolina, South Carolina, Georgia, Alabama, Florida, Kentucky, and Ohio results in unjust discrimination against interstate commerce. Similar proceedings in Minnesota and Wisconsin have been discontinued because the railroads did not wish to proceed.

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Operating Statistics of Large Steam Railways—Selected Items for the Month of April, 1933,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotives and tenders	Ton-miles (thousands): Net Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1933	402	104,198	108,947	7,643	2,860	67.1	143,783	44,831	61	50	44.9	22
1932	402	123,496	129,690	8,536	3,334	65.0	175,087	57,437	68	58	45.8	16
Boston & Maine.....1933	2,052	232,659	263,043	22,326	7,528	68.2	398,627	139,405	123	163	57.1	17
1932	2,058	277,774	314,555	27,872	8,889	67.3	473,862	169,744	146	144	49.7	21
N. Y., New H. & Hartf....1933	2,048	294,145	358,427	14,807	9,204	65.1	486,899	164,905	229	128	35.9	55
1932	2,056	349,515	415,334	21,081	11,173	62.9	613,026	216,067	216	127	37.1	15
Great Lakes Region:												
Delaware & Hudson.....1933	848	168,498	221,442	22,957	5,322	62.0	323,330	139,571	253	29	10.3	170
1932	848	217,901	288,596	31,180	6,983	58.7	447,967	199,712	250	27	9.8	139
Del., Lack. & Western.....1933	998	309,837	341,608	38,523	9,799	65.4	551,856	202,042	202	67	25.0	65
1932	998	346,538	380,757	47,679	11,216	65.1	658,838	267,013	210	56	21.1	47
Erie (incl. Chi. & Erie)....1933	2,316	557,858	576,061	45,026	22,810	62.7	1,374,681	498,424	300	193	39.2	105
1932	2,316	635,576	660,874	57,314	26,833	61.4	1,635,410	598,940	345	146	29.8	112
Grand Trunk Western.....1933	1,003	182,400	183,616	1,188	4,583	60.5	269,593	86,246	79	73	48.0	17
1932	1,021	191,395	192,934	1,481	4,672	61.7	269,326	89,988	99	50	33.5	36
Lehigh Valley 1933	1,341	330,832	344,754	29,508	9,994	62.6	590,628	216,526	172	145	45.7	28
1932	1,343	380,940	401,951	38,609	11,460	62.5	703,988	287,423	202	143	41.4	27
Michigan Central 1933	1,962	341,006	341,341	8,492	10,507	59.7	614,971	190,520	138	71	34.0	45
1932	2,115	374,442	374,445	8,783	11,274	60.7	640,832	202,822	128	80	38.4	31
New York Central.....1933	6,320	1,192,958	1,272,873	77,780	45,179	59.8	2,749,652	1,041,832	536	623	53.7	75
1932	6,329	1,395,161	1,496,801	86,552	51,235	59.8	3,158,234	1,242,367	639	607	48.7	106
New York, Chi. & St. L....1933	1,661	404,989	425,385	4,517	12,826	60.9	747,813	252,958	123	106	46.5	21
1932	1,660	445,481	457,742	4,883	13,272	60.6	763,389	248,161	156	86	35.5	45
Pere Marquette 1933	2,286	290,786	306,450	2,706	6,832	58.7	436,225	157,781	121	56	31.6	23
1932	2,243	296,234	303,976	2,656	6,562	58.8	409,369	148,618	135	41	23.3	31
Pitts. & Lake Erie.....1933	231	46,038	46,877	679	1,835	56.8	155,871	85,068	27	44	62.3	8
1932	235	55,028	56,002	673	2,327	58.0	195,979	107,377	50	35	41.1	24
Wabash 1933	2,453	472,965	476,918	8,480	14,106	63.2	799,658	249,600	181	167	47.9	26
1932	2,497	499,915	510,744	10,902	15,207	62.2	858,199	258,171	224	148	39.7	44
Central Eastern Region:												
Baltimore & Ohio.....1933	6,283	1,080,344	1,306,686	134,667	31,840	60.9	2,056,638	856,897	721	575	44.4	207
1932	6,277	1,280,375	1,467,562	144,927	35,811	60.2	2,341,545	993,022	901	448	33.2	274
Big Four Lines.....1933	2,787	508,670	529,975	12,446	14,781	61.6	928,392	387,324	261	187	41.9	59
1932	2,790	584,076	601,276	11,739	15,522	60.4	965,574	401,595	231	186	44.6	20
Central of New Jersey....1933	692	123,126	134,376	22,056	3,825	56.6	261,766	117,345	117	61	34.0	66
1932	692	166,801	180,139	24,739	4,996	55.3	351,295	161,749	116	62	34.8	41
Chicago & Eastern Ill.....1933	939	153,980	154,169	2,382	2,934	61.5	184,960	72,812	69	97	58.6	29
1932	939	150,100	151,037	2,219	3,040	62.5	180,603	69,688	87	76	46.8	44
Elgin, Joliet & Eastern.....1933	446	64,658	64,674	968	1,500	60.3	114,798	54,642	74	14	15.9	31
1932	447	58,508	59,602	2,445	1,314	57.6	95,222	42,899	85	5	5.8	34
Long Island 1933	396	28,504	29,242	12,301	270	52.5	20,125	7,645	29	18	38.1	3
1932	396	37,287	38,591	14,132	422	52.7	31,312	12,150	41	6	11.9	7
Pennsylvania System 1933	10,525	2,203,055	2,443,422	239,229	74,601	61.4	4,826,119	2,007,478	1,629	869	34.8	640
1932	10,536	2,490,673	2,814,837	272,009	86,226	61.1	5,654,292	2,388,312	2,165	386	15.1	995
Reading 1933	1,454	343,197	371,213	36,449	9,034	58.5	640,554	289,662	291	95	24.6	129
1932	1,453	431,265	466,380	44,781	11,509	57.4	840,856	388,759	305	100	24.8	86
Pocahontas Region:												
Chesapeake & Ohio.....1933	3,136	660,828	694,733	27,052	27,417	55.0	2,284,324	1,200,641	530	164	23.6	256
1932	3,136	700,096	729,613	22,762	26,775	54.4	2,236,191	1,170,450	548	102	15.8	255
Norfolk & Western.....1933	2,204	465,346	480,023	19,214	17,122	60.8	1,293,483	652,610	426	58	11.9	217
1932	2,258	482,326	499,952	22,141	17,138	58.8	1,354,053	675,648	450	32	6.5	217
Southern Region:												
Atlantic Coast Line.....1933	5,144	582,300	583,847	7,817	12,118	58.6	655,101	202,311	352	127	26.6	96
1932	5,144	595,688	598,226	8,319	12,561	61.9	672,181	228,303	379	101	21.0	92
Central of Georgia.....1933	1,904	191,215	192,374	3,009	4,208	68.8	222,220	81,366	85	55	39.5	..
1932	1,900	189,829	191,610	3,006	4,279	66.7	230,483	85,337	95	51	35.2	..
Ill. Cent. (incl. Y. & M. V.)1933	6,658	1,101,837	1,114,153	19,016	25,292	59.5	1,620,244	618,162	620	328	34.6	36
1932	6,662	1,134,024	1,145,675	18,778	26,609	60.7	1,646,898	612,632	745	194	20.7	66
Louisville & Nashville.....1933	5,165	780,019	822,638	17,370	16,280	59.3	1,074,848	465,695	353	345	49.4	76
1932	5,263	830,947	876,950	22,048	16,661	58.2	1,118,293	487,885	464	246	34.6	168
Seaboard Air Line.....1933	4,373	474,824	492,197	3,154	11,309	61.5	666,997	221,999	236	60	20.3	37
1932	4,437	499,235	507,550	4,454	11,134	62.2	642,773	212,299	267	31	10.4	42
Southern 1933	6,602	1,012,761	1,025,717	18,552	23,934	66.2	1,283,771	466,340	725	191	20.9	222
1932	6,669	1,032,592	1,043,144	18,738	23,643	65.8	1,274,143	460,236	710	226	24.1	206
Northwestern Region:												
Chi. & North Western.....1933	8,443	790,619	825,693	20,109	20,146	63.6	1,171,041	392,851	583	242	29.3	236
1932	8,443	852,962	888,435	17,471	20,141	63.1	1,140,787	382,685	643	165	20.4	239
Chicago Great Western....1933	1,463	187,588	188,452	15,394	5,614	58.5	348,778	116,971	60	41	41.0	3
1932	1,455	186,349	186,519	15,746	6,186	61.0	366,451	126,078	63	51	44.6	5
Chi., Milw., St. P. & Pac...1933	11,234	1,021,089	1,078,014	52,274	26,427	61.6	1,639,655	640,026	720	188	20.7	379
1932	11,266	1,074,022	1,128,813	54,225	26,809	61.6	1,616,969	616,724	746	165	18.1	374
Chi., St. P., Minn. & Om..1933	1,697	185,793	192,429	7,505	3,795	69.3	219,320	87,082	139	35	20.2	77
1932	1,714	200,863	207,231	8,326	3,872	67.6	213,940	83,448	144	29	16.9	73
Great Northern 1933	8,424	498,671	502,378	12,758	14,522	69.5	862,298	377,382	471	139	22.7	163
1932	8,308	533,561	537,722	15,327	15,095	66.8	880,394	367,289	477	145	23.4	157
Minneap., St. P. & S. St. M. 1933	4,314	306,492	310,415	1,909	6,593	66.6	375,238	156,684	132	44	25.1	10
1932	4,325	333,739	338,349	3,208	7,043	66.1	381,958	145,865	149	50	25.4	16
Northern Pacific 1933	6,404	425,837	452,576	29,548	12,900	71.7	723,022	309,606	393	128	24.5	110
1932	6,398	440,454	464,165	28,548	13,220	73.8	715,671	295,371	372	144	27.9	121
Oreg.-Wash. R. R. & Nav..1933	2,146	116,952	121,197	7,026	3,123	71.4	174,189	69,820	76	43	36.3	25
1932	2,219	136,395	140,767	8,881	3,157	71.6	172,684	68,456	99	32	24.6	40
Central Western Region:												
Alton 1933	952	166,989	167,903	1,062	3,480	57.5	221,153	71,829	57	48	45.7	7
1932	989	187,923	188,467	1,014	3,733	53.8	245,494	75,674	90	20	17.8	31
Atch., Top. & S. Fe (incl. P. & S. F.).....1933	11,609	1,233,614	1,330,754	48,011	33,465	65.0	1,957,570	645,053	667	270	28.8	256
1932	11,599	1,292,998	1,390,626	55,825	36,463	62.7	2,171,117	689,826	717	208	22.4	283
Chi., Burl. & Quincy.....1933	9,157	948,161	976,154	26,167	23,506	60.2	1,386,347	548,513	444	155	25.9	63
1932	9,210	927,305	951,921	24,087	23,899	62.4	1,316,892	533,554	490	116	19.1	74
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)...1933	8,333	908,100	924,145	6,366	20,128	58.5	1,232,844	427,157	454	156	25.6	113
1932	8,342	1,011,307	1,031,577	4,781	22,927	58.8	1,389,609	475,969	532	134	20.1	144
Denver & R. G. Wn.....1933	2,514	153,258	166,328	16,838	4,509	68.8	258,139	103,510	195	41	17.4	76
1932	2,557	154,387	165,950	15,542	4,534	67.4	257,733	98,690	206	33	13.8	82
Los Angeles & Salt Lake...1933	1,239	129,078	143,643	16,141	3,837	71.4	212,325	80,286	71	36	33.6	7
1932	1,240	136,256	150,320	16,060	4,019	68.8	222,213	80,499	87	22	20.0	26
Oregon Short Line.....1933	2,453	200,146	208,586	13,517	5,028	65.1	295,106	109,346	137	54	28.1	55
1932	2,498	202,448	208,489	10,842	5,437	68.7	307,843	115,998	157	21	11.7	80
Southern Pacific—Pacific Lines 1933	8,878	838,554	892,653	88,042	25,880	63.0	1,558,647	494,825	513	385	42.8	204
1932	8,911	1,042,797	1,111,294	104,935	30,580	60.1	1,891,891	578,238	576	364	38.7	183
Union Pacific 1933	3,768	678,775	700,800	34,672	23,691	64.2	1,375,452	471,061	358	117	24.6	188
1932	3,768	699,550	715,530	27,210	26,620	65.2	1,496,407	499,272	390	71	15.3	192
Southwestern Region:												
Gulf, Colo. & S. Fe.....1933	1,943	182,505	186,506	2,559	4,484	59.9	274,727	100,813	92	32	25.9	24
1932	1,943	188,990	193,934	2,542	4,911	61.5	309,703	125,343	104	28	21.3	41
Mo.-Kans.-Texas Lines 1933	3,282	331,682	333,573	4,736	8,245	61.4	477,856	166,520	153	78	33.9	74
1932	3,282	332,949	334,775	5,610	8,627	58.6	525,848	184,178	162	61	27.3	82
Missouri Pacific 1933	7,385	929,558	956,807	21,447	25,054	62.1	1,527,110	549,051	410	167	28.9	166
1932	7,409	995,028	1,010,586	21,620	26,110	62.0	1,545,458	534,519	470	146	23.7	198
St. Louis-San Francisco....1933	5,193	582,484	587,819	6,265	12,740	60.2	789,846	306,460	394	75	16.0	159
1932	5,193	561,758	565,052	5,763	12,588	60.9	762,139	288,072	421	83	16.5	150
St. Louis Southwestern Lines 1933	1,902	177,290	188,984	2,549	4,603	61.3	268,905	89,569	104	27	20.8	30
1932	1,902	185,745	188,423	2,545	4,427	56.9	269,723	79,519	114	29	20.0	44
Texas & New Orleans.....1933	4,474	432,065	432,460	6,593	9,607	62.7	557,884	184,907	216	96	30.6	51
1932	4,611	472,095	472,918	4,838	10,255	62.1	598,859	204,973	231	103	30.7	60
Texas & Pacific.....1933	1,946	240,342	240,342	1,637	7,309	59.8	452,878	154,117	187	61	24.5	85
1932	1,946	264,642	264,642	1,521	6,900	53.2	458,564	128,998	177	72	28.7	56

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Compared with April, 1932, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany....1933	4,629	2,829	7,458	39.4	22,093	1,380	430	15.7	200	19.1	3,720	163	35.0
1932	3,955	2,566	6,521	26.2	22,798	1,418	465	17.2	294	26.2	4,766	161	36.6
Boston & Maine....1933	11,107	7,078	18,185	21.0	23,983	1,726	604	18.5	258	20.4	2,282	108	33.3
1932	11,165	7,235	18,400	12.8	23,850	1,704	610	19.1	307	23.9	2,746	110	39.3
N. Y., New H. & Hartf....1933	16,965	8,461	25,426	8.8	25,505	1,655	561	17.9	216	18.5	2,684	113	34.8
1932	16,074	10,288	26,362	7.6	25,012	1,754	618	19.3	273	22.4	3,504	111	42.3
Great Lakes Region:													
Delaware & Hudson....1933	12,727	2,039	14,766	3.7	25,134	1,919	828	26.2	315	19.4	5,486	121	28.9
1932	11,664	2,959	14,623	3.9	27,363	2,056	917	28.6	455	27.1	7,848	120	38.6
Del., Lack. & Western....1933	19,032	3,274	22,306	11.7	27,019	1,781	652	20.6	302	22.4	6,747	135	47.0
1932	19,281	3,828	23,109	7.7	25,851	1,901	771	23.8	385	24.8	8,917	143	53.6
Erie (incl. Chi. & Erie)...1933	35,869	10,685	46,554	5.3	39,408	2,464	893	21.9	357	26.0	7,173	99	42.0
1932	36,309	10,716	47,025	4.2	39,670	2,573	942	22.3	425	31.0	8,620	105	48.8
Grand Trunk Western....1933	5,649	6,826	12,475	19.4	27,673	1,478	473	18.8	230	20.2	2,867	106	40.8
1932	4,430	8,249	12,679	10.5	25,867	1,407	470	19.3	237	19.9	2,937	109	43.6
Lehigh Valley....1933	19,849	4,018	23,867	20.7	31,504	1,785	654	21.7	302	22.3	5,383	138	39.3
1932	22,450	4,307	26,757	12.4	30,824	1,848	755	25.1	358	22.9	7,134	139	42.6
Michigan Central....1933	26,556	17,190	43,746	11.5	33,883	1,803	559	18.1	145	13.4	3,237	118	55.7
1932	25,517	16,523	42,040	6.7	32,543	1,711	542	18.0	161	14.7	3,197	121	61.5
New York Central....1933	81,634	54,642	136,276	27.0	36,560	2,305	873	23.1	255	18.5	5,495	99	38.8
1932	81,548	68,972	150,520	15.0	35,209	2,264	890	24.2	275	19.0	6,543	101	42.4
New York, Chi. & St. L...1933	13,379	5,808	19,187	12.1	32,783	1,847	625	19.7	439	36.6	5,078	102	62.5
1932	16,178	5,855	22,033	11.2	29,631	1,714	557	18.7	375	33.1	4,983	105	63.7
Pere Marquette....1933	13,295	3,832	17,127	2.5	26,032	1,500	543	23.1	307	22.6	2,300	92	58.4
1932	13,397	3,568	16,965	3.2	23,557	1,382	502	22.6	292	21.9	2,209	101	58.2
Pitts. & Lake Erie....1933	17,756	7,062	24,818	32.6	48,771	3,386	1,848	46.4	114	4.3	12,265	105	22.2
1932	18,608	6,208	24,816	24.3	45,167	3,561	1,951	46.1	144	5.4	15,219	101	22.1
Wabash....1933	18,119	7,135	25,254	5.3	35,209	1,691	528	17.7	329	29.5	3,392	109	46.5
1932	19,328	7,104	26,432	5.6	34,291	1,717	516	17.0	326	30.8	3,447	115	46.7
Central Eastern Region:													
Baltimore & Ohio....1933	97,770	15,321	113,091	16.1	25,785	1,904	793	26.9	253	15.4	4,546	148	37.1
1932	96,218	15,387	111,605	11.5	24,839	1,829	776	27.7	297	17.8	5,273	153	39.8
Big Four Lines....1933	20,579	18,440	39,019	20.3	32,308	1,825	761	26.2	331	20.5	4,633	120	40.4
1932	23,068	16,317	39,385	14.6	29,685	1,653	688	25.9	340	21.8	4,797	118	48.9
Central of New Jersey....1933	17,919	5,161	23,080	27.1	26,621	2,126	953	30.7	169	9.8	5,653	134	29.3
1932	17,520	5,861	23,381	20.5	27,856	2,106	970	32.4	231	12.9	7,789	139	38.4
Chicago & Eastern Ill....1933	6,197	1,914	8,111	18.4	22,620	1,201	473	24.8	299	19.6	2,585	136	31.4
1932	6,228	1,996	8,224	14.0	21,915	1,203	464	22.9	282	19.7	2,474	147	31.3
Elgin, Joliet & Eastern....1933	9,825	3,455	13,280	24.0	15,931	1,775	845	36.4	137	6.2	4,084	119	24.9
1932	9,607	3,625	13,232	10.1	13,748	1,628	733	32.6	108	5.7	3,198	132	23.0
Long Island....1933	797	3,028	3,825	1.8	5,690	706	268	28.3	67	4.5	643	304	29.5
1932	774	3,917	4,691	.8	6,453	840	326	28.8	86	5.7	1,022	319	37.4
Pennsylvania System....1933	253,821	38,621	292,442	9.6	31,772	2,191	911	26.9	229	13.8	6,358	128	35.8
1932	250,281	45,974	296,255	6.6	32,136	2,270	959	27.7	269	15.9	7,556	127	40.3
Reading....1933	39,938	6,424	46,362	20.1	23,560	1,866	844	32.1	208	11.1	6,641	150	35.2
1932	38,691	7,104	45,795	6.8	23,810	1,950	901	33.8	283	14.6	8,919	142	42.0
Pocahontas Region:													
Chesapeake & Ohio....1933	47,752	8,213	55,965	1.7	49,006	3,457	1,817	43.8	715	29.7	12,763	79	34.7
1932	48,886	6,414	55,300	3.0	45,334	3,194	1,672	43.7	706	29.6	12,442	79	38.6
Norfolk & Western....1933	41,629	4,204	45,833	3.2	41,571	2,780	1,402	38.1	475	20.5	9,870	115	34.4
1932	41,848	3,852	45,700	.8	40,779	2,807	1,401	39.4	493	21.2	9,973	115	36.1
Southern Region:													
Atlantic Coast Line....1933	27,903	6,888	34,791	18.9	20,714	1,125	347	16.7	194	19.8	1,311	118	41.2
1932	28,546	6,618	35,164	8.2	20,029	1,128	383	18.2	216	19.2	1,479	117	42.2
Central of Georgia....1933	7,229	1,881	9,110	24.6	20,397	1,162	426	19.3	298	22.4	1,425	131	46.5
1932	7,878	1,534	9,412	25.1	20,325	1,214	450	19.9	302	22.7	1,497	130	44.4
Ill. Cent. (incl. Y. & M. V.).1933	55,232	12,330	67,562	27.1	25,030	1,470	561	24.4	305	21.0	3,095	140	39.8
1932	55,592	11,644	67,236	16.6	23,883	1,452	540	23.0	304	21.7	3,065	138	41.3
Louisville & Nashville....1933	55,499	6,326	61,825	23.4	20,704	1,378	597	28.6	251	14.8	3,005	149	40.1
1932	55,317	6,229	61,546	16.2	20,246	1,346	587	29.3	264	15.5	3,090	157	42.2
Seaboard Air Line....1933	12,926	5,624	18,550	5.9	23,009	1,405	468	19.6	399	33.1	1,692	122	55.7
1932	15,175	5,386	20,561	5.5	20,885	1,288	425	19.1	344	29.0	1,595	127	57.3
Southern....1933	32,570	17,079	49,649	18.0	20,883	1,268	460	19.5	313	24.3	2,355	148	38.0
1932	43,856	22,322	66,178	13.7	20,341	1,234	446	19.5	232	18.1	2,300	151	37.8
Northwestern Region:													
Chi. & North Western....1933	46,044	15,906	61,950	9.7	22,872	1,481	497	19.5	211	17.0	1,551	125	34.2
1932	45,803	16,803	62,606	6.3	19,644	1,337	449	19.0	204	17.0	1,511	136	37.4
Chicago Great Western....1933	4,364	2,624	6,988	12.4	32,712	1,859	624	20.8	558	45.8	2,664	134	67.2
1932	5,121	3,227	8,348	11.4	33,112	1,966	677	20.4	503	40.5	2,888	131	59.4
Chi., Milw., St. P. & Pac..1933	61,620	12,077	73,697	4.2	24,806	1,606	627	24.2	289	19.4	1,899	121	41.5
1932	63,997	11,254	75,251	3.2	22,737	1,506	574	23.0	273	19.3	1,825	127	43.3
Chi., St. P., Minneap. & Om.1933	2,266	6,007	8,273	10.0	17,398	1,180	469	22.9	351	22.1	1,710	117	38.3
1932	2,180	7,350	9,530	8.2	15,874	1,065	415	21.6	292	20.0	1,623	122	41.5
Great Northern....1933	44,310	7,338	51,648	6.4	26,040	1,729	757	26.0	244	13.5	1,493	127	28.1
1932	45,200	7,256	52,456	6.6	24,374	1,650	688	24.3	233	14.4	1,474	132	29.6
Minneap., St. P. & S. St. M.1933	19,458	2,555	22,013	3.7	18,810	1,224	511	23.8	238	15.1	1,211	107	59.2
1932	20,829	2,822	23,651	4.1	17,616	1,144	437	20.7	206	15.0	1,124	112	57.2
Northern Pacific....1933	43,531	3,431	46,962	11.2	26,056	1,698	727	24.0	220	12.8	1,612	146	30.9
1932	42,799	3,476	46,275	9.3	23,829	1,625	671	22.3	213	12.9	1,539	142	31.8
Oreg.-Wash. R. R. & Nav..1933	8,100	1,585	9,685	9.4	23,735	1,489	597	22.4	240	15.1	1,085	139	35.7
1932	9,292	1,608	10,900	10.4	21,008	1,266	502	21.7	209	13.5	1,028	159	38.0
Central Western Region:													
Alton....1933	3,771	5,405	9,176	17.9	26,562	1,324	430	20.6	261	22.0	2,516	147	53.6
1932	4,370	3,954	8,324	5.8	26,690	1,306	403	20.3	303	27.8	2,551	141	57.4
Atch., Top. & S. Fe (incl. P. & S. F.)1933	67,101	7,244	74,345	11.5	29,819	1,587	523	19.3	289	23.1	1,852	113	49.0
1932	69,850	8,841	78,691	10.7	30,323	1,679	534	18.9	292	24.6	1,982	107	52.1
Chi., Burl. & Quincy....1933	43,021	10,861	53,882	9.8	25,228	1,462	579	23.3	339	24.2	1,997	124	55.8
1932	46,861	10,959	57,820	5.9	22,793	1,420	575	22.3	308	22.1	1,931	131	53.7
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)....1933	40,472	10,124	50,596	17.9	23,021	1,358	470	21.2	281	22.7	1,709	138	50.8
1932	42,388	10,620	53,008	13.2	22,960	1,374	471	20.8	299	24.5	1,902	142	51.9
Denver & R. G. Wn....1933	14,584	2,351	16,935	4.2	26,188	1,684	675	23.0	204	12.9	1,373	166	25.8
1932	14,586	2,794	17,380	3.4	24,830	1,669	639	21.8	189	12.9	1,287	158	25.3
Los Angeles & Salt Lake..1933	4,874	968	5,842	6.9	28,708	1,645	622	20.9	458	30.7	2,159	142	49.5
1932	5,018	903	5,921	3.2	27,522	1,631	591	20.0	453	32.9	2,164	140	51.2
Oregon Short Line....1933	10,468	3,430	13,898	18.1	25,298	1,474	546	21.7	262	18.5	1,486	121	38.8
1932	10,269	3,407	13,676	6.8	25,071	1,521	573	21.3	283	19.3	1,548	117	41.2
Southern Pacific—Pacific Lines....1933	41,060	21,449	62,509	13.2	30,152	1,859	590	19.1	264	21.9	1,858	114	36.4
1932	44,950	21,219	66,169	11.6	28,118	1,814	555	18.9	291	25.6	2,163	113	43.1
Union Pacific....1933	25,773	6,881	32,654	20.7	44,299	2,026	694	19.9	481	37.7	4,167	114	51.6
1932	24,426	7,383	31,809	13.0	42,887	2,139	714	18.8	523	42.8	4,417	109	53.7
Southwestern Region:													
Gulf, Colo. & S. Fe....1933	13,889	1,684	15,573	5.4	25,260	1,505	552	22.5	216	16.0	1,729	111	50.8
1932	12,892	2,563	15,455	4.7	26,868	1,639	663	25.5	270	17.2	2,150	101	49.6
Mo.-Kans.-Texas Lines....1933	10,535	2,330	12,865	5.9	25,887	1,441	502	20.2	431	34.8	1,691	96	48.8
1932	12,178	2,858	15,036	4.2	27,426	1,579	553	21.3	408	32.7	1,871	89	50.9
Missouri Pacific....1933	27,061	14,089	41,150	14.6	24,527	1,643	591	21.9	445	32.7	2,478	128	56.5
1932	33,182	9,687	42,869	14.1	27,448	1,553	537	20.5	416	32.7	2,405	120	55.9
St. Louis-San Francisco...1933	25,785	4,528	30,313	5.8	23,361	1,356	526	24.1	337	23.3	1,967	135	42.2
1932	28,847	4,995	33,842	4.8	22,286	1,357	513	22.9	284	20.4	1,849	131	37.7
St. Louis Southwestern Lines....1933	4,739	2,468	7,207	10.4	27,209	1,517	505	19.5	414	34.7	1,569	107	48.5
1932	5,779	2,043	7,822	10.7	26,610	1,452	428	18.0	339	33.2	1,394	103	44.5
Texas & New Orleans....1933	9,220	10,726	19,946	6.5	21,785	1,291	428	19.2	309	25.6	1,378	92	46.9
1932	12,523	10,337	22,860	8.5	20,628	1,269	434	20.0	299	24.1	1,482	96	47.6
Texas & Pacific....1933	5,898	5,061	10,959	13.7	29,767	1,894	641	21.1	469	37.2	2,640	83	32.5
1932	5,929	4,423	10,352	12.4	27,788	1,733	487	18.7	415	41.8	2,210	86	35.7

Century of Progress Fair Stimulates Train Travel

Heavy movement of passengers into Chicago followed opening of the Exposition

A heavy movement of passengers into Chicago, particularly on June 17 and 18, has followed the opening of the Century of Progress Exposition. While the exposition is the main objective of travelers, the increase in travel is also encouraged by the low railroad rates in effect, and a general improvement in business. This increase is prevalent on all of the railroads entering Chicago and originates in practically all parts of the United States, with the eastern territory furnishing the major portion of the business. This is reflected especially in the movements over the New York Central, the Pennsylvania, and the Baltimore & Ohio.

The New York Central on June 18, carried 3,897 visitors to Chicago, the Exposition Flyer of the Michigan Central operating in six sections and carrying 1,162 passengers, and the Wolverine in four sections carrying 819 passengers, the Commodore Vanderbilt of the New York Central in three sections carrying 658 passengers, and the Lake Shore Limited in two sections carrying 380 passengers. Other regular New York Central trains carried 1,140 passengers into Chicago on that day in addition to a special party of 900 persons from Elkhart, Ind.

The business over the Pennsylvania was of equal size, this railroad operating 13 of its trains in 30 sections into Chicago on June 17 and 18. On June 17, the Liberty Limited, the Steel City Express, the Chicago Daylight Express, and the Atlantic Express were each operated in two sections while the Gotham Limited was operated in three sections. In addition, a special train of 12 cars carried a special party of 500 from New York. On June 18, the Pennsylvania Limited and the Fort Dearborn arrived in three sections each, while the Liberty Limited, the Chicago Nite Express, the Gotham Limited, the Steel City Express, the Atlantic Express and the Manhattan Express, arrived in two sections.

The Baltimore & Ohio operated the Capitol Limited in two sections into Chicago on June 4 and 5, three sections on June 11, two sections on June 13 and 15, and three sections on June 18. On June 25, the Capitol Limited is scheduled to operate in four sections while on June 17 a single section carried 208 passengers from Chicago to the east.

This increase in passenger traffic is further reflected on the Chicago & North Western, on which the number of passengers per day on six trains coming into Chicago between June 1 and June 9 increased 88 per cent. The trains involved are the Portland Rose, the Los Angeles Limited, the Corn King Limited, the Columbine, and the North Western Limited. Between May 15 and June 10 a total of 80 extra sleeping cars were operated between Oakland, Cal., and Chicago. On June 17 and 18 the West Coast Limited, the North Western Limited, and the Columbine each arrived in Chicago in two sections.

On other railroads entering Chicago heavy movements also occurred. The Chicago, Milwaukee, St. Paul & Pacific on June 16, 17 and 18, handled 12 special parties of 1,338 people into Chicago. The Atchison, Topeka & Santa Fe on June 7-9 operated a special train carrying 460 people from Texas. The Illinois Central on June 19 ran three special trains carrying people from Dallas, Texas.

Railroads Modify Gold Clause in Bonds

Taking cognizance of Public Resolution No. 10 passed recently by Congress various railroads have applied to the Interstate Commerce Commission for authority to modify the "gold clause" in recently authorized bond issues to make it subject to the provisions relating to the discharge of the obligations in any coin or currency which at the time may be legal render.

I. C. C. Appropriation Fixed at $5,190,000

The appropriations for the Interstate Commerce Commission for the coming fiscal year were fixed at $5,190,000 in the independent offices appropriation bill passed by both houses of Congress just before adjournment. The House bill provided $5,040,000 and the Senate increased it by $150,000 at the request of shippers to allow for holding more hearings away from Washington. The larger figure was accepted after the bill had gone to conference.

Railway Employment Increased in May

An increase of 11,623 in the number of railway employees took place between the middle of April and the middle of May, according to the Interstate Commerce Commission's monthly compilation. The number in May was 937,103, a decrease of 12.02 per cent as compared with the number in May, 1932. Under the emergency transportation act just passed by Congress this number for May is the one that may not be reduced as a result of any action taken by the federal coordinator or regional coordinating committees.

Katy Has Two Record Excursions

More than 1,200 Texas school children were carried on two excursions operated by the Missouri-Kansas-Texas to Austin as a means of enabling the boys and girls to see their State Capitol, inspect the university and visit state officers. One special ran from Fort Worth, 199 miles, on June 3, and another from Dallas, 210 miles, on May 20, which also carried children from Denison, Bells, Whitewright, Greenville, Royse City, Rockwall, Garland, Waxahachie and Highland Park. The outstanding feature of these educational tours, which elicited widespread interest, was the fact that many parents permitted their children to travel unaccompanied, except by a few teachers. For many of the children on each of the excursions, a trip to Austin by a steam railroad train was a novel and thoroughly delightful experience and, with few exceptions, it was the first time that they had ever ridden on a train.

Wyer Denounces Doles To Selfish Business

Highway, waterway, air transport and other subsidies exceed cost of schools

Samuel S. Wyer, consulting engineer of Columbus, Ohio, in a radio address on June 17 under the auspices of the American Taxpayers League, denounced as doles the subsidies being granted, among others, to the competitors of the railways.

"England," he said in part, "has doles for labor while the United States has doles for business groups. The term 'dole' as I use it means something given without the recipient giving anything in return. In conception and practice it rests on the idea of 'let the government do it and the taxpayer pay for it.' Our failure to appreciate that 'there is no economic Santa Claus, and that whenever a governmental agency spends a dollar that dollar ultimately comes from the pocket of some individual taxpayer' is responsible for much of today's economic suffering."

"It is our dole-minded thinking that has created the delusion of 'public works expansion,' as a way out of today's muddle. It ought to be self-evident that unless a public works project will within its useful life return to the public treasury the money that the taxpayer has advanced, that the project merely increases the taxpayer's burden.

"The navigation service of the Panama canal has never been self-sustaining. Not only are the tolls below cost, but there is an urgent need for revision in order to bring about a fairer distribution of revenue. The recent recommendation of the governor of the Panama canal for tolls revision for more revenue was defeated by a lobby of selfish business groups who want the tolls continued and this in the face of the fact that 51 per cent of the canal traffic is foreign shipping. This dole costs the taxpayers 14 million dollars annually.

"The New York State Barge Canal since 1883 has been operated on a tolls-free basis. This costs the taxpayers $5 a ton for each ton of freight that moves through the canal. At the present time the principal beneficiaries are the oil industry and Canadian wheat growers who use this tolls-free facility for shipping wheat that competes with our own home-grown wheat. This dole costs the taxpayers 14.7 million dollars annually.

"The Mississippi river waterway program is on a tolls-free basis. The shippers pay about 40 per cent of the cost of the service, and the taxpayers pay 60 per cent. The benefits go primarily to small business groups. This dole costs the taxpayers 15 million dollars annually.

"In relation to air mail, Postmaster General Brown on June 7, 1931, said: 'The postage you attach to your air mail letters defrays less than half the actual cost.' The principal beneficiaries of this dole are relatively small business groups and the cost to the taxpayers is in excess of 17 million dollars annually.

"From 1920 to 1931 the dole to the United States postoffice averaged 60 million dollars annually. The opposition to making

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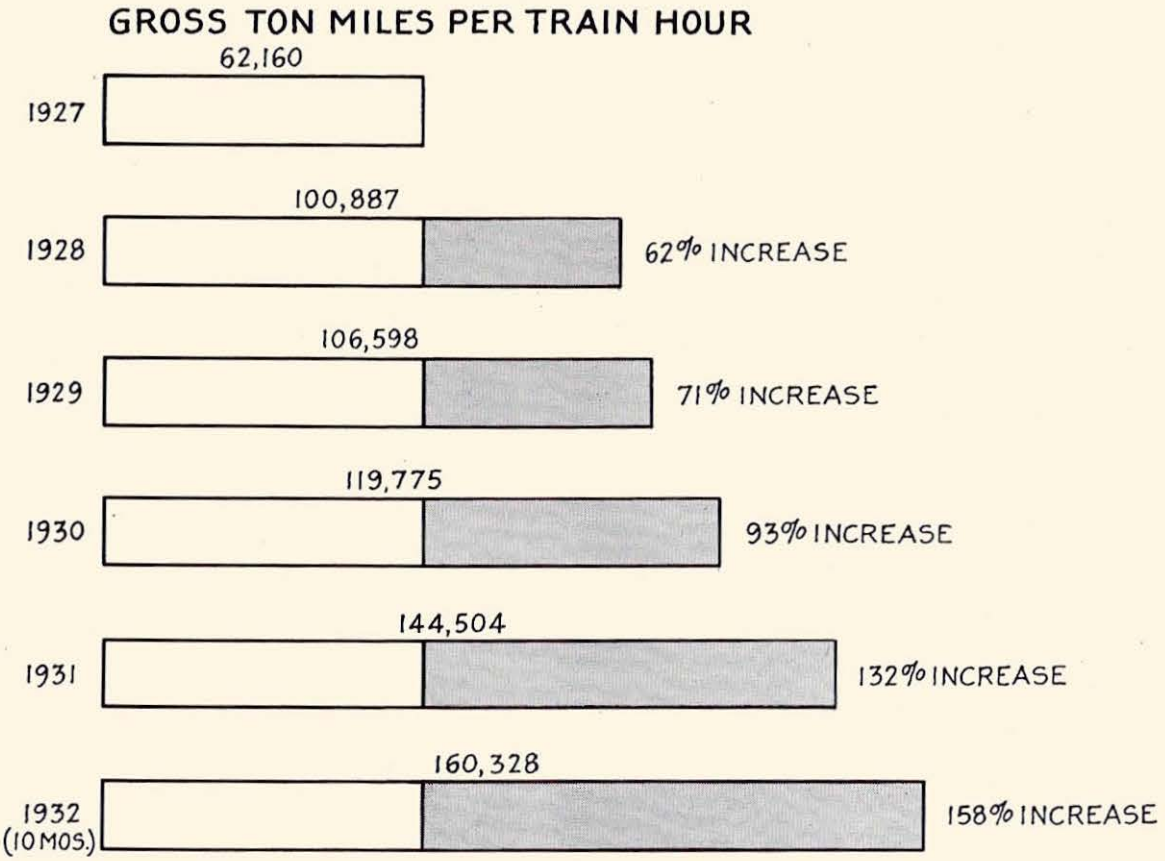
"LET'S LOOK AT THE RECORD"

Here It Is!



This is the record of what was actually accomplished on one large road. **IN LARGE PART THIS WAS MADE POSSIBLE BY THE ACQUISITION OF SUPER-POWER LOCOMOTIVES.** Between 1927 and 1932 the output in gross ton miles per freight train hour was increased 158%. Hand in hand with this performance freight train speeds were increased 64%.

Does such a policy pay? We leave the answer to you.

LIMA LOCOMOTIVE WORKS, INCORPORATED

LIMA OHIO

the postoffice self-sustaining comes primarily from business groups who want to get their mail and parcel post delivered below actual cost and at the expense of the taxpayers.

"The proponents of the proposed St. Lawrence Waterway project are insisting on tolls-free service. This will cost the taxpayers $100,000 every sunrise, or over 40 million dollars annually. If it were made self-sustaining it would be cheaper to ship by existing railroads.

"I have made a personal study in the cities of Cleveland and Columbus, Ohio, of the doles contributed by taxpayers for motor vehicle transportation and municipal airports. In both cities schools have been unnecessarily out. If the motor vehicle and air industries in these two cities had paid merely one fourth of what they are now getting for nothing at the expense of the taxpayer, it would not have been necessary to curtail school activities or cut teachers' salaries and we must develop a public opinion that will insist that schools are more important than doles to selfish business groups.

"The term 'rural highways' means all highways outside of towns. The users of these highways pay 38 per cent of the cost, and 1,385 million dollars, or 62 per cent, is a dole from taxpayers. This dole is equal to one tenth of the total cost of government in the United States. That is, putting the rural highways on a self-supporting basis would be equivalent to cutting cost of all government 10 per cent.

"Farmers appreciate the distinction between improved highways for local traffic that are assets to their communities, and super-highways for foreign traffic that are liabilities to their communities. The driving urge for this enormous rural highway program has not come from the farmers but from selfish groups who want to get the benefits, namely, the oil, cement, road building, and motor vehicle industries.

"Recognizing that the rural roads are not improved primarily to go to a particular farm, but rather for traffic foreign to the neighborhood to go past the farm, all states should immediately relieve farmers of the annual assessments against their farms for rural roads—amounting in 1930 to 398 million dollars—and take this road cost out of the motor vehicle fund. This would enable farmers to take care of their own rural school tax problems on a self-respecting basis without a dole from the cities. Over one half of the farmers' property tax burden is for rural highways.

"The doles that have been discussed are not for lowering living costs, but increasing the profits of small groups. These doles alone represent more than one fifth of the cost of government and are greater than everything the taxpayers are paying for all tax-supported schools. Schools have been cut, but the doles have not. We ought to recognize that schools are more important than doles to selfish groups.

"It has been our dole-minded thinking that is responsible for our rapidly rising cost of government. Since 1913 governmental expenditures have grown more than twice as fast as the national income. In the last 17 years the total governmental expenditures have increased at the rate of more than 2 million dollars every working day, bringing us to the astounding situation that this year it will take over one third of the nation's income to pay its taxes. Over half the government cost is inside the county line. Every county should have a live, aggressive, militant taxpayers association to secure a reduction in the less essential government expenses."

Heilman Made Secretary

L. C. Heilman, acting secretary of the Committee on Automatic Train Control and acting secretary of the Committee on Grade Crossing Protection of the American Railway Association, has been appointed secretary of both committees.

Ocean Excursions From Boston

The Boston & Maine, beginning on Sunday, June 25, will run "boat-trains" as in former years from interior points on its lines to Boston for one-day excursions out on the ocean; passengers being delivered to the "Evangeline" and the "Yarmouth" of the Eastern Steamship Lines. Trains are to be run on Sundays from Springfield and other places in Western Massachusetts; from White River Junction, Vt., and Plymouth, N. H., and intermediate points. The sea cruise will be over a triangular course along the south shore (Massachusetts Bay) around Provincetown, and then northward as far as Gloucester; and then back to Boston.

North Western Dining Car Campaign

As a result of a campaign conducted by the Chicago & North Western, in connection with the introduction of Select-Your-Price meals, 1,209 passengers from coaches were persuaded to patronize dining cars from May 4 to May 20, inclusive. It is estimated that 40 per cent of this business, or practically 500 of these passengers, in the yeriod of 17 days were persuaded by reason of the attractive leaflets distributed and through personal solicitation by dining car superintendents and waiters-in-charge. In addition, considerable business was secured from passengers in sleeping and parlor cars.

Anti-Scalping Ordinance Enacted by Chicago

An ordinance prohibiting the scalping of railroad tickets in Chicago was passed by the city council on May 31 to become effective June 12. The ordinance reads "No person or persons shall obstruct, incumber, lounge or loaf in or about any railroad depot in the city, nor shall any person or persons be permitted to remain in or about any such place having in his or their possession the unused portion or portions of non-transferable railroad tickets restricted for the use to the original purchaser thereof by the railroad company issuing the same, for the purpose of selling same, offering the same for sale, advertising the same for sale or in any manner to aid in the sale or purchase of such partially used non-transferable railroad tickets. No person or persons shall sell within the city of Chicago the whole or any portion of a non-transferable railroad ticket restricted for the use of the original purchaser thereof by the railroad company issuing the same. Any person or persons violating any of the provisions of these sections shall be fined not less than $5 nor more than $50 for each offense."

C. N. J. and L. V. Win Appeal in Jersey Tax Case

The United States Circuit Court of Appeals for the Third Circuit, in a decision rendered June 16, has upheld the right of the Central of New Jersey and the Lehigh Valley to seek in the U. S. District Court relief from discrimination which the roads allege is being practiced against them in the matter of assessment and collection of New Jersey taxes. Approximately $3,000,000 in taxes assessed during 1932 is involved.

The case was brought by the railroads against the New Jersey tax commissioner on the basis of a contention that New Jersey property of the C. N. J. and L. V. is assessed on 100 per cent valuation whereas the property of others in the state is assessed on a 65 per cent valuation. When the case came before the District Court the defendant filed no answer but his motion to dismiss the complaint was granted on the ground that the plaintiff should seek relief in the State courts. The present circuit court decision, pointing out that the state courts have disclaimed power to grant relief, remands the case to the District Court for a hearing on the merits of the complaint.

I. C. C. Compiles Elements of Valuation

The Interstate Commerce Commission on June 17 made public and served on the parties to the general rate case now pending before it a statement setting forth a summary of "results of the commission's valuations of the steam railways of continental United States to date, under section 19-a of the interstate commerce act, which are deemed available with respect to certain elements of value." Pursuant to a stipulation at the hearing it is made part of the record in the rate proceeding. The summary follows:

Property as of December 31, 1932, and Prices as of June 1, 1933, Unless Otherwise Indicated

	Eastern District	Southern District	Western District	Total
Reproduction New—Except Land Period Prices	$10,207,277,298	$4,081,020,501	$9,665,248,436	$23,953,546,235
Spot Prices	10,129,966,492	4,049,319,616	9,563,672,761	23,742,958,869
Reproduction Less depreciation—Except Land Period Prices	7,585,449,573	3,079,183,153	7,089,834,583	17,754,467,309
Spot Prices	7,527,996,020	3,055,260,774	7,015,856,984	17,599,113,778
*Original Cost—Except Land	9,703,430,054	4,094,695,233	9,062,240,107	22,860,365,394
Land	1,660,906,409	389,776,265	982,117,152	3,032,799,826
*Working Capital—Including materials and supplies	134,819,000	53,860,000	150,175,000	338,854,000
**Investment without deduction of accrued depreciation (Carriers' Book)	10,727,401,013	4,495,827,775	10,868,081,951	26,091,310,739

* As of December 31, 1932.
** As of December 31, 1932. From Bureau of Statistics, Interstate Commerce Commission, as to Class I, II, and III carriers, but not including switching and terminal companies. Does not include working capital.

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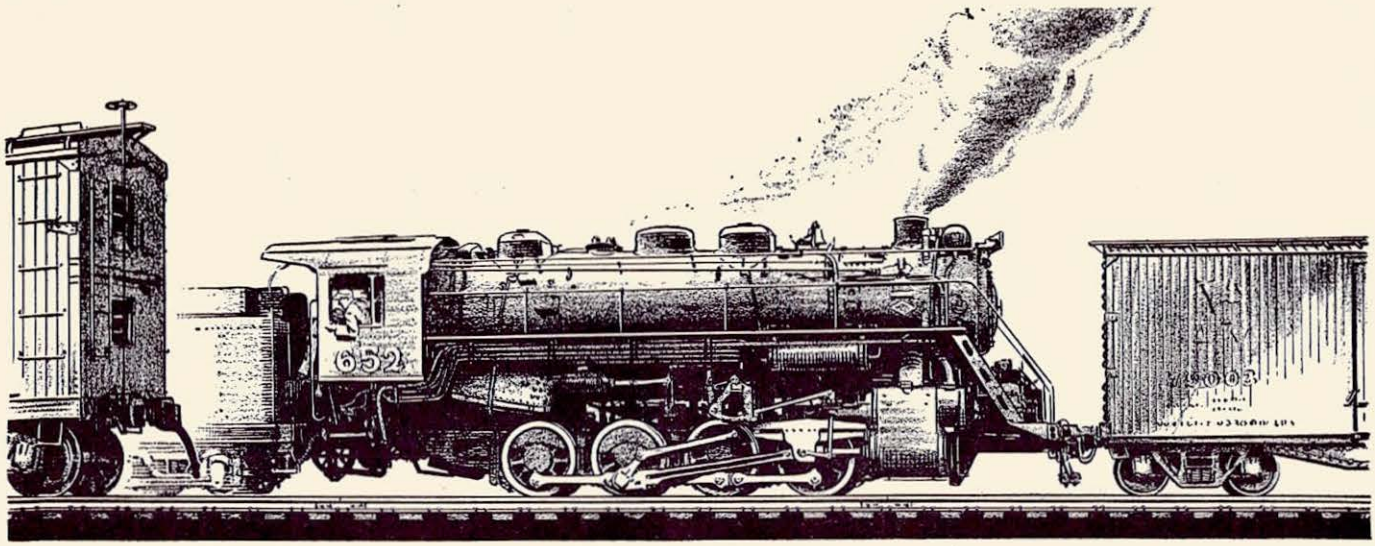
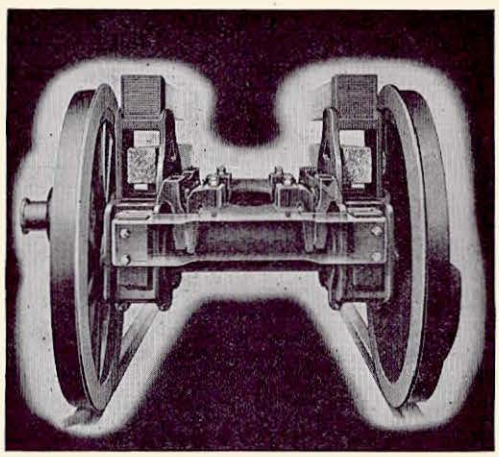


MAKE THE 8-WHEEL SWITCHER MORE FLEXIBLE



- *Franklin Lateral Motion Driving Box gives the 0-8-0 a rigid wheel base equivalent to an 0-6-0*

CURVES prevented the use of an 0-8-0 type switcher as a helper out of the station. Instead, two 0-6-0 switchers did the work.

Then the Franklin Lateral Motion Driving Box was applied to the 0-8-0 and enabled this type of locomotive to negotiate the sharp curves without excessive flange wear.

Now, it is doing the work of the two 0-6-0 switchers and recently made 14,000 miles over the assigned mileage (65,000) with an average wear of flanges on entering the shop of 7/32 inches. In this time, only two tires were renewed.

The Lateral Motion Driving Box puts the rigid wheel base of any engine into the class below it in lateral pressure against, and wear on, the rail head. Use it on your new power.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Safety Notes for Officers

The circular of the Safety Section, A. R. A. for the month of July seems to be addressed more to officers than to those in the lower ranks; the introductory paragraph calling it definitely to the attention of executive and operating officers as well as foremen. "One of our greatest handicaps in carrying on safety work is that management is so reluctant to assume responsibility," says the committee. The circular is illustrated by a half dozen pictures showing common examples of carelessness; a workman falling from a ladder not properly set up; two trainmen trying to support themselves on a single foothold; a window washer falling from a carelessly placed support, etc.

The committee intimates that managements sometimes are more prompt to correct a wrong practice when it does damage to property than when it does damage mainly to the workman himself. Examples, evidently taken from actual life, are cited of a trainmaster who sees careless work but does not properly reprimand the careless workman; the foreman who allows his men to handle a track-car carelessly without administering proper reproof.

The examples cited are said to be "just a few injuries typical of those recorded against the records of every railroad"—and on roads that have suitable rules to insure safety. The management should realize that it is responsible for seeing that its own instructions are obeyed.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States *

Compiled from the Monthly Reports of Revenues and Expenses for 151 Steam Railways

FOR THE MONTH OF APRIL, 1933 AND 1932

Item	United States		Eastern District		Southern District		Western District	
	1933	1932	1933	1932	1933	1932	1933	1932
Average number of miles operated	241,195.71	241,675.73	59,555.75	59,717.41	45,865.41	46,184.39	135,774.55	135,773.93
Revenues:								
Freight	$180,212,394	$207,879,108	$74,884,275	$93,130,817	$38,242,680	$39,627,930	$67,085,439	$75,120,361
Passenger	22,919,647	31,007,797	14,284,031	18,640,655	2,857,248	3,812,995	5,778,368	8,554,147
Mail	7,405,264	8,157,761	2,955,135	3,245,442	1,259,422	1,382,277	3,190,707	3,530,042
Express	4,446,459	4,968,766	1,807,581	2,166,836	1,012,559	1,074,942	1,626,319	1,726,988
All other transportation	5,426,872	6,818,700	3,036,812	3,914,981	503,140	653,649	1,886,920	2,250,070
Incidental	4,029,500	5,522,102	2,295,209	3,326,966	644,153	754,804	1,090,138	1,440,332
Joint facility—Cr.	613,255	763,910	212,135	289,058	132,568	139,597	268,552	335,255
Joint facility—Dr.	175,992	232,420	58,192	88,690	14,927	19,722	102,873	124,008
Railway operating revenues	224,877,399	264,885,724	99,416,986	124,626,065	44,636,843	47,426,472	80,823,570	92,833,187
Expenses:								
Maintenance of way and structures	24,439,873	32,505,378	9,226,985	13,585,453	4,934,402	6,071,195	10,278,486	12,848,730
Maintenance of equipment	45,243,604	54,211,080	20,001,600	25,466,333	8,396,264	9,635,621	16,845,740	19,109,126
Traffic	7,012,489	8,509,497	2,561,029	3,315,069	1,365,625	1,554,780	3,085,835	3,639,648
Transportation	83,309,008	98,559,140	38,280,657	47,080,601	14,433,714	16,227,246	30,594,637	35,251,293
Miscellaneous operations	1,694,805	2,384,430	849,204	1,210,760	219,917	292,123	625,684	881,547
General	11,739,713	13,568,372	5,058,739	5,915,335	1,932,493	2,374,800	4,748,481	5,278,237
Transportation for investment—Cr.	143,324	354,794	45,028	115,515	14,149	13,029	84,147	226,250
Railway operating expenses	173,296,168	209,383,103	75,933,186	96,458,036	31,268,266	36,142,736	66,094,716	76,782,331
Net revenue from railway operations	51,581,231	55,502,621	23,483,800	28,168,029	13,368,577	11,283,736	14,728,854	16,050,856
Railway tax accruals	22,156,124	24,702,115	9,347,082	10,124,443	4,274,802	4,695,172	8,534,240	9,882,500
Uncollectible railway revenues	100,527	80,388	41,100	26,974	10,875	9,333	48,552	44,081
Railway operating income	29,324,580	30,720,118	14,095,618	18,016,612	9,082,900	6,579,231	6,146,062	6,124,275
Equipment rents—Dr. balance	7,221,271	7,516,994	3,366,570	3,730,702	943,858	711,069	2,910,843	3,075,223
Joint facility rent — Dr. balance	3,061,820	2,929,965	1,666,385	1,629,723	395,396	299,809	1,000,039	1,000,433
Net railway operating income	19,041,489	20,273,159	9,062,663	12,656,187	7,743,646	5,568,353	2,235,180	2,048,619
Ratio of expenses to revenues (per cent)	77.06	79.05	76.38	77.40	70.05	76.21	81.78	82.71
FOR FOUR MONTHS ENDED WITH APRIL, 1933 AND 1932								
Average number of miles operated	241,295.79	241,668.71	59,562.19	59,716.14	45,880.10	46,151.84	135,853.50	135,800.73
Revenues:								
Freight	$704,006,801	$846,478,137	$303,122,807	$376,338,380	$152,438,981	$166,402,103	$248,445,013	$303,737,654
Passenger	95,111,159	137,311,571	57,736,503	81,391,799	12,756,511	17,504,326	24,618,145	38,415,446
Mail	30,001,689	32,908,875	11,779,965	12,945,048	5,169,432	5,640,907	13,052,292	14,322,920
Express	12,407,109	18,899,864	5,228,444	8,289,737	2,912,240	3,871,111	4,266,425	6,739,016
All other transportation	21,805,441	27,480,362	12,480,296	15,790,871	1,971,520	2,419,234	7,353,625	9,270,257
Incidental	16,518,417	22,639,643	9,585,774	13,306,853	2,521,222	3,107,871	4,411,421	6,224,919
Joint facility—Cr.	2,584,939	3,149,759	867,673	1,075,453	516,806	543,917	1,200,460	1,530,389
Joint facility—Dr.	746,429	964,443	211,063	287,740	71,080	77,760	464,286	598,943
Railway operating revenues	881,689,126	1,087,903,768	400,590,399	508,850,401	178,215,632	199,411,709	302,883,095	379,641,658
Expenses:								
Maintenance of way and structures	241,295.79	241,668.71	59,562.19	59,716.14	19,626,148	25,328,370	35,549,405	43,883,133
Maintenance of equipment	183,691,102	223,898,259	81,027,624	102,617,302	35,056,388	40,870,651	67,607,090	80,410,306
Traffic	28,298,923	34,272,587	10,478,514	13,212,272	5,501,297	6,445,031	12,319,112	14,615,284
Transportation	344,190,561	419,920,450	159,617,827	199,073,052	58,836,821	69,077,663	125,735,913	151,769,735
Miscellaneous operations	7,300,904	10,340,901	3,710,628	5,215,987	949,458	1,338,366	2,640,818	3,786,548
General	48,217,475	55,351,806	20,790,699	24,286,413	8,046,075	9,591,485	19,380,701	21,473,908
Transportation for investment—Cr.	1,029,946	1,264,423	493,279	427,885	130,949	85,805	405,718	750,733
Railway operating expenses	702,034,391	864,366,730	311,321,832	396,612,788	127,885,238	152,565,761	262,827,321	315,188,181
Net revenue from railway operations	179,654,735	223,537,038	89,268,567	112,237,613	50,330,394	46,845,948	40,055,774	64,453,477
Railway tax accruals	88,152,722	97,770,599	36,005,914	39,311,899	17,341,506	18,797,281	34,805,302	39,661,419
Uncollectible railway revenues	327,648	309,620	127,581	117,021	37,170	39,484	162,897	153,115
Railway operating income	91,174,365	125,456,819	53,135,072	72,808,693	32,951,718	28,009,183	5,087,575	24,638,943
Equipment rents—Dr. balance	26,808,549	28,300,201	13,385,779	14,417,209	2,328,322	2,014,840	11,094,448	11,868,152
Joint facility rent — Dr. balance	11,604,398	11,509,149	6,109,356	6,165,925	1,328,719	1,073,837	4,166,323	4,269,387
Net railway operating income	52,761,418	85,647,469	33,639,937	52,225,559	29,294,677	24,920,506	*d 10,173,196*	8,501,404
Ratio of expenses to revenues (per cent)	79.62	79.45	77.72	77.94	71.76	76.51	86.78	83.02

* Excludes switching and terminal companies. Statements prior to January, 1933, included switching and terminal companies.

d Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

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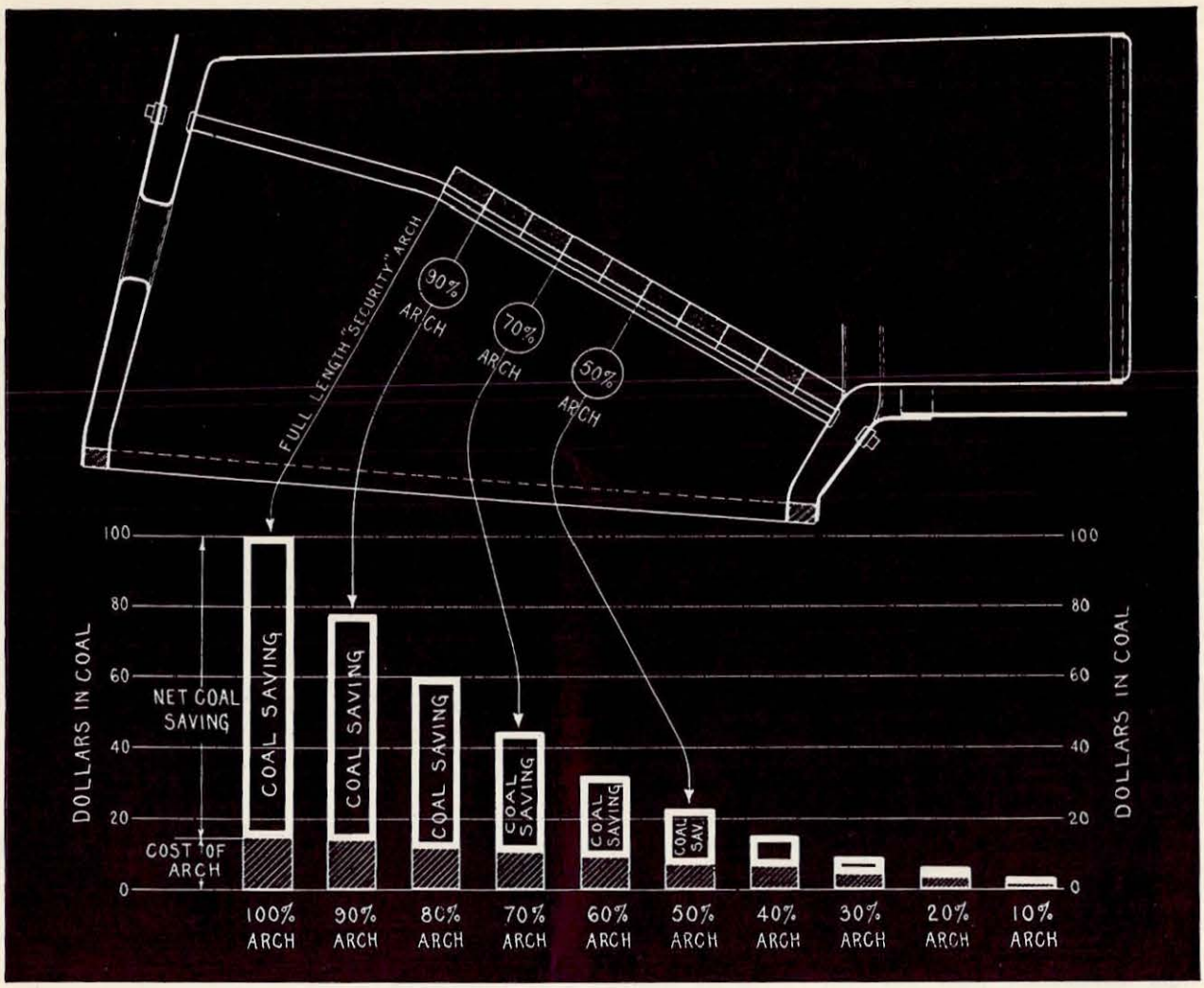

The Effect of Abbreviated Arches On Fuel Saving

Follow Thru On Economies

There's More To
SECURITY ARCHES
Than Just Brick

APPARENT economies of the moment may turn into a net loss when followed thru to their conclusion.

It may seem like saving money to cut down on the locomotive Arch or to skimp on Arch Brick. But every dollar thus "saved" costs ten in extra fuel.

This has been demonstrated repeatedly by tests on several roads involving various types of locomotives.

Economy is essential but it should be true economy that results in the greatest net return to the treasury. This calls for a 100% Arch on every locomotive.

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

Connecticut Bars Trailers, Limits Truck Drivers' Hours

The Connecticut Legislature has enacted a law which provides that after January 1, 1934, no four-wheel, two-axle trailer will be permitted to operate in the state without a special permit from the Highway Commission. An exception is made in the case of trailers used for camping and for the transportation of poles, lumber, structural steel and certain equipment such as concrete mixers. A law was also passed limiting truck drivers to 12 hours of continuous duty after which there must be a period of at least 8 hours off duty. Interrupted service must not extend for more than 16 hours in any 24-hour period, after which 10 hours' rest must be granted.

Southern Bids for July 4 Travel

Attractively-designed circulars, carrying their bargain-fare messages in attention-arresting two-color typography, are now being distributed by the Southern to announce that it is offering one-cent-per-mile round-trip fares over the July 4 holiday "for everybody" to "anywhere in the South." Patrons are urged to "get away from the grind over the Fourth" by taking advantage of the bargain fares which "make economical travel more comprehensive and convenient than hitherto available by any form of transportation."

The one-cent-per-mile tickets, good on all Southern trains except the Crescent Limited, will be valid for outbound journeys on July 1, 2 and 3 and will have a return limit of July 8; accompanying Pullman rate reductions will be available and stop-overs will be permitted.

Seatrain Elimination from Southern Classification Upheld

The Interstate Commerce Commission, by Division 4, has issued a report finding justified schedules filed by Agent E. H. Dulaney, who publishes the Southern Classification, proposing to eliminate Seatrain Lines, Inc., as a participating carrier in that classification. The proposed elimination had been suspended by the commission on protest of the Seatrain company. The decision is based on very technical grounds, stating that if the protested schedules become effective they will not change any rates or charges nor deprive either protestant or respondents of any of their rights under the interstate commerce act. Proceedings are now pending before the commission in which the status of the Seatrain company is in issue and the report says that if and when joint rates subject to the Southern Classification are established between protestant and one or more of the respondents, the appropriate manner of making the ratings and rules of that classification applicable to such rates is by permitting protestant then to become a party to the classification. Commissioner Eastman dissented.

Regulation of Operations of Oil Pipe Lines Proposed

Provisions of the national industrial recovery act signed by President Roosevelt on June 16 include, among those relating to the oil business, an authorization to the President to initiate before the Interstate Commerce Commission proceedings "necessary to prescribe regulations to control the operations of oil pipe lines and to fix reasonable, compensatory rates for the transportation of petroleum and its products by pipe lines," and the Interstate Commerce Commission is directed to grant preference to the hearing and determination of such cases. The President also is authorized to institute proceedings to divorce from any holding company any pipe-line company controlled by such holding company which by unfair practices or by exorbitant rates in the transportation of petroleum or its products tends to create a monoply. He is also authorized to prohibit the transportation in Interstate and foreign commerce of petroleum and products produced or withdrawn from storage in excess of the amount permitted to be produced or withdrawn by any state law or valid regulation or order prescribed thereunder by a duly authorized agency of a state.

Non-Resident Trucks Pay $20 Fee for Each Trip into Vermont

A fee of $20 for each trip into Vermont is now being assessed by that state on non-resident trucks or tractor-trailer combinations which have a rated carrying capacity of over 3,000 lb. or which carry a load in excess of 4,000 lb. Under this law, which was passed at the latest session of the Vermont legislature, the previous border-line zones where interstate operations are permitted were left undisturbed. Exempt also are buses or trucks operated in Vermont over fixed routes or between fixed termini.

The new non-resident fee is paid to the Vermont commissioner of motor vehicles or his authorized agent and upon such payment a receipt is issued showing the name and address of the non-resident operator, the make of vehicle to be operated, the amount paid and the date of operation of the described vehicle in Vermont. Should a non-resident operator subject to this fee elect at any time to register his trucks in Vermont all amounts paid as fees in the same registration year are to be deducted from the registration charges.

Another section of the new law provides for the issuance of four-month licenses to non-resident operators of motor vehicles which are of smaller carrying capacities than those subject to the $20 fee.

Central Western Shippers' Board

The Central Western Shippers' Advisory Board will hold an industrial conclave, in conjunction with its eleventh annual meeting, at Riverton, Wyo., on June 28, to crystallize into a memorial to Congress the sentiment of those who are affected by unregulated transportation. Invitations have been issued to over 1,000 individuals, corporations, firms and chambers of commerce in the states of Colorado, Idaho, Nebraska, Utah and Wyoming. The holding of the conclave is due to the fact that since state legislatures over the country at large have taken inadequate action on this subject, the matter is becoming increasingly irksome to shippers and receivers of freight. In addition, unregulated transportation is annihilating some long-established industries and depriving tax rolls of local governments of thousands of dollars in taxes, stifling the purchasing power of the communities and causing increased unemployment.

According to a statement issued by the board, "transportation is fast reverting to a 'racket' and, unless something is done to eliminate the unfair competition which exists today between subsidized forms of transportation, such as the inland waterways, the Panama canal, and the airways on the one hand, and unregulated trucks and buses on the other, the rail lines of the country and the stability of business throughout the nation must suffer severe losses.

"This unsettled condition in the transportation of the nation is making itself felt in all commercial lines to such an extent that businesses, both large and small, are extremely hesitant to buy because of the unknown quantity of the competitor's freight bill which often is the factor which decides the profit or loss in business. To that extent the lack of fair regulation in transportation is retarding the recovery of all business and is a real contributor to the depression."

Equipment and Supplies

PASSENGER CARS

The Chicago, Burlington & Quincy has given an order to the Edward G. Budd Manufacturing Company for a high speed three-car articulated streamlined train. The new train is to have a top speed of 120 m.p.h. It will be air-conditioned with mechanical refrigeration and will be operated at one-third the cost of steam transportation. The motive power will be supplied by a 600-hp. Winton Engine Corporation, 2-cycle Diesel engine, a development of the General Motors Corporation of which the Winton Company is a subsidiary. The body of the car will be constructed entirely of stainless steel, electrically "shot-welded" by the Budd process, which provides a light, strong and durable construction. The first car of the train will contain the engine and electric transmission, together with a mail and baggage compartment; the second and third cars will be used for passengers. There will be a buffet in the middle car.

IRON AND STEEL

The Seaboard Air Line has placed an order for 11,815 tons of 100-lb. RE rail.

The Southern Pacific has ordered 260 tons of structural steel for a subway at San Joaquin, Cal., from the McClintic Marshall Corporation and 150 tons of structural steel for miscellaneous bridge work from the Moore Dry Dock Company.

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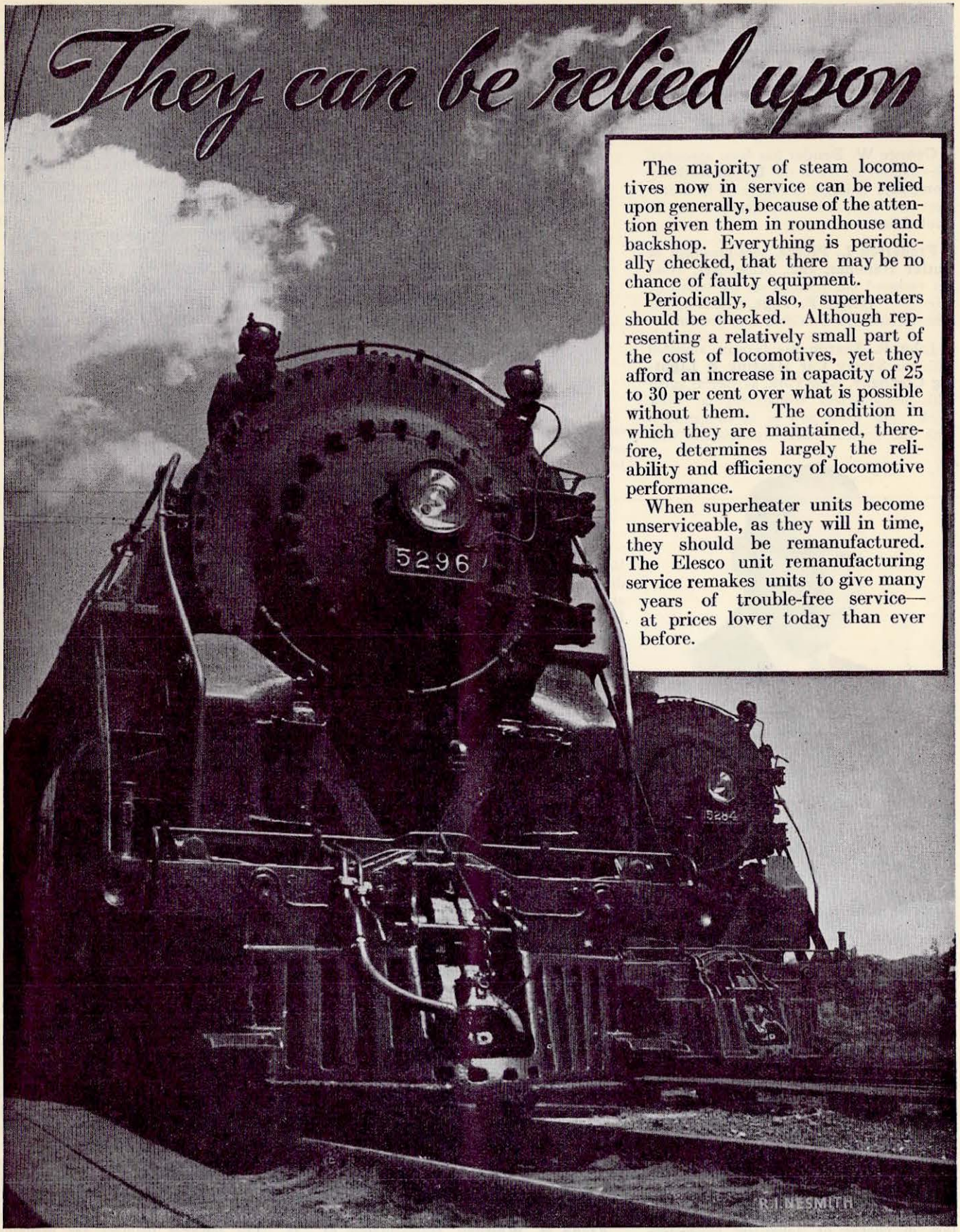
They can be relied upon



The majority of steam locomotives now in service can be relied upon generally, because of the attention given them in roundhouse and backshop. Everything is periodically checked, that there may be no chance of faulty equipment.

Periodically, also, superheaters should be checked. Although representing a relatively small part of the cost of locomotives, yet they afford an increase in capacity of 25 to 30 per cent over what is possible without them. The condition in which they are maintained, therefore, determines largely the reliability and efficiency of locomotive performance.

When superheater units become unserviceable, as they will in time, they should be remanufactured. The Elesco unit remanufacturing service remakes units to give many years of trouble-free service—at prices lower today than ever before.

ELESCO

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, Inc.

NEW YORK A-790 CHICAGO

ELESCO

Supply Trade

R. B. Wilson, sales manager of the St. Louis, Mo., plant of **Joseph T. Ryerson & Son, Inc.,** Chicago, has been appointed manager of the St. Louis plant.

George W. Bender has been appointed sales representative of the **Union Railway Company,** Chicago, in charge of its northwest territory, with headquarters at St. Paul, Minn.

Frederick L. Pierce, vice-president of **Cutler Hammer, Inc.,** Milwaukee, Wis., has resigned but remains on the board of directors. **Henry F. Vogt,** treasurer, has been elected vice-president and treasurer.

John R. Sexton has become affiliated with the **Safety Car Heating & Lighting Company,** New York, as special agent with headquarters temporarily at New York. His work will be in co-operation with the present sales organization with

John R. Sexton

the major part of his time devoted to a study of the trend of railroad equipment design. Mr. Sexton was graduated from Rutgers University and entered the railway field in 1911. For two years he was associated with the New York Central in general construction work in and about the New York district. In October, 1913, Mr. Sexton went to the Erie as resident engineer, remaining with that road until April, 1923, at which time he was regional engineer in the Chicago region. He then entered the supply field as manager of railroad sales for the H. H. Robertson Company, with headquarters at Chicago, and later was transferred to Pittsburgh, Pa., as manager of the rail department. In 1929, Mr. Sexton joined Stone & Webster Engineering Corporation, handling the extension of that company's activities into the railroad field.

H. J. Cornell, formerly chief engineer of the Transportation Equipment Corporation in charge of automatic locomotive washer installations, is now connected with **Sperry Products, Inc.,** Brooklyn, N. Y., as sales engineer in charge of locomotive washer installations, with headquarters at Brooklyn. Sperry Products, Inc., has recently acquired the exclusive license rights under the Mackin Automatic Locomotive Washer patents. During the past 22 years Mr. Cornell has been engaged in

H. J. Cornell

engineering work on many large railroad and industrial design and construction projects.

OBITUARY

Spencer Otis, president of the National Boiler Washing Company, Chicago, who died in Waco, Tex., on June 10, was born at Orange, N. J., on February 28, 1858. He entered railway service with the Union Pacific in 1879 as an apprentice, and, until 1890, held the positions of foreman, master mechanic and divisional mechanical engineer. In 1890, he left railway work to take charge of the Kansas City Switch & Frog Company and later joined another railway supply company to engage in the development of the drop-bottom coal car. In 1920, he was elected president of the

Spencer Otis

National Boiler Washing Company, Chicago, the position he was holding at the time of his death.

Frank H. Whitney, representative of the Westinghouse Air Brake Company and the Westinghouse Traction Brake Company, at Boston, Mass., died on June 8 at his home in Needham, Mass. Mr. Whitney was born on March 4, 1868, at Bridgeport, Conn., and attended public schools of Boston. He began railroad work at an early age on the Boston & Providence, later a part of the Old Colony System (now the New York, New Haven & Hartford). After serving as locomotive fireman he was engineman on the well-known "Bay State Limited." Mr. Whitney was promoted to air brake instructor at the time the Westinghouse Air Brake Company's instruction car was traversing the Old Colony line, and he subsequently became road foreman of engines. In 1904, he entered the service of the Westinghouse Air Brake Company as a traveling air brake inspector at Boston and in 1907 was transferred as inspector to the New York office. He subsequently was appointed representative at New York. In January, 1923, he was promoted to export representative at New York and since January, 1932, served as representative in charge of its Boston, Mass., office.

Construction

ERIE.—Revised detailed plans and specifications and an estimate of cost of $655,600 for four stages of the work of eliminating various grade crossings of this road in Elmira, N. Y., have been approved by the New York Public Service Commission. The crossings involved include those at Miller, Home and LaFrance streets, Pennsylvania avenue, Partridge, Henry and Hudson streets, Chemung place, Water street Railroad avenue, Gray, Church, First, Second, Fifth and Market streets.

KANSAS CITY SOUTHERN.—A contract has been awarded to the Kansas City Bridge Company, Kansas City, Mo., for the fabrication and erection of three 84-ft. deck girder spans to replace a 250-ft. truss span at this company's crossing of Little river near Morris Ferry, Ark. The estimated cost of this project is $51,000.

PENNSYLVANIA.—The New York Public Service Commission has approved revised general and detailed plans and specifications and an estimate of cost of $108,600 for the elimination of the Condensary crossing of this road in Fillmore, Allegany county, N. Y.

PENNSYLVANIA.—A contract for the construction of a new pier at Baltimore, Md., to replace three smaller ones destroyed by fire last summer, has been let by this road to Sinclair & Grigg, Philadelphia, Pa. The new pier will be located at the foot of Seventh avenue. It will be a double-deck structure 930 ft. long and 223 ft. wide, with two depressed tracks in the center, double-track apron on one side, and a single track apron on the other side. The second floor will be devoted to storage space of which there will be a total of 135,000 sq. ft. The contract includes the dredging necessary for a depth of 35 ft. of water on each side of the pier, in addition to the removal of the old piers Nos. 2, 3 and 4. The work will be started at once and the new pier is expected to be ready for service by August 1.

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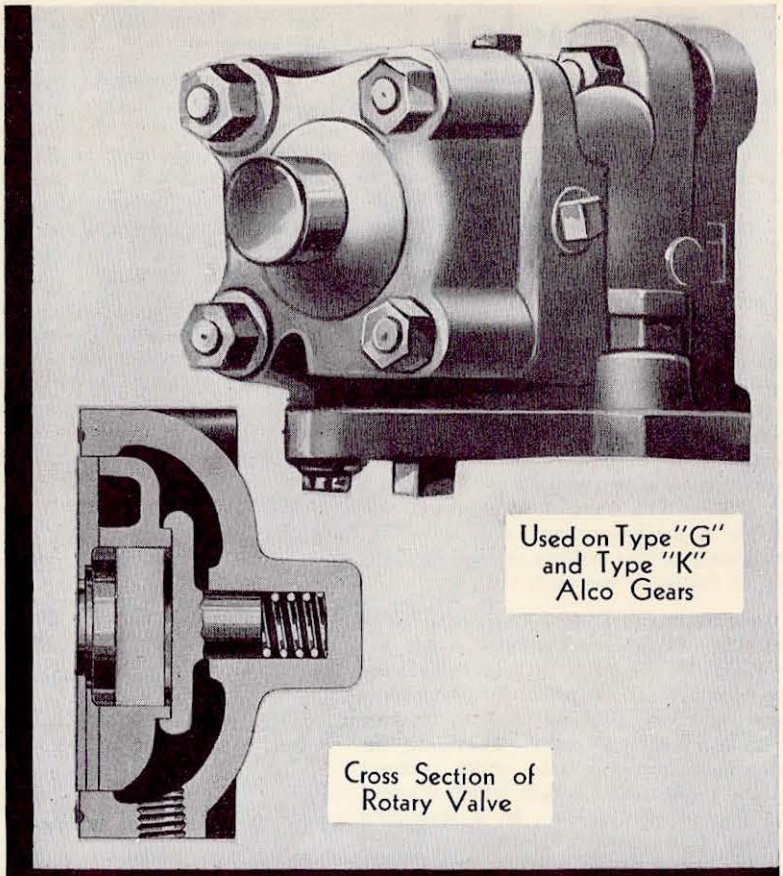
Alco REVERSE GEAR FACTS



Used on Type "G" and Type "K" Alco Gears

Cross Section of Rotary Valve

THE ROTARY VALVE

The Heart of the Gear

is a distinctive feature which gives ALCO Reverse Gears many important operating advantages.

EFFICIENCY. This packless flat rotary valve has long demonstrated its efficiency and reliability in air-brake operation.

SENSITIVITY. It is easy to operate and very sensitive to slight movements of the reverse lever or piston.

ACCURACY. The valve seats properly at all times, eliminating faulty action of the gear through the valve lifting.

SIMPLICITY. This type of valve eliminates the troublesome stuffing box on the valve steam. The valve body has brass bushings to permit the taking up of excess lost motion.

ECONOMY. The entire valve may be easily and quickly removed for grinding or repairs without disturbing or removing the gear. The same valve is used on both the type "K" and type "G" ALCO Gears.

American Locomotive Company
30 Church Street New York N.Y.

Financial

BELLEVUE & CASCADE.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire by purchase and operate 35.5 miles of narrow-gage line from the Chicago, Milwaukee, St. Paul & Pacific, between Bellevue and Cascade, Ia. It is proposed to operate with a Budd-Michelin motor car.

CHICAGO & NORTH WESTERN.—*Bond Maturity Plan.*—This company has offered to holders of $7,724,000 of 6 per cent consolidated mortgage bonds of the Fremont, Elkhorn & Missouri, which mature October 1, payment 50 per cent in cash and 50 per cent in general mortgage 5 per cent bonds due 1987. The cash, it is expected, will be lent by the Reconstruction Finance Corporation provided holders of "substantially all" of the bonds assent to the plan.

FORT BENNING R. R.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire by lease the 6.8 miles of line owned by the government at Fort Benning and to operate them as a common carrier. Previously the lines have been operated under contract by the Central of Georgia which opposed the present application. In a dissenting opinion Commissioner Mahaffie said that the tracks in question were a plant facility and that the purpose in making a common carrier of them was to secure divisions on through rates from trunk lines. "The fact that gain from the divisions arrangement," he added, "is to be divided between the contractors and the United States does not, as I see it, alter the situation."

PENNSYLVANIA COMPANY.—*Wabash and L. V. Stock.*—The federal Circuit Court of Appeals has sustained this company, a subsidiary of the Pennsylvania R. R., in its retention of stock, amounting virtually to control, of the Wabash and Lehigh Valley, overruling an order by the Interstate Commerce Commission ordering the sale of the stock.

PERE MARQUETTE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $659,000 of first mortgage 4½ per cent, series C bonds in reimbursement for capital expenditures.

SAN JOAQUIN & EASTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its entire line extending from El Prado, Calif., northeasterly to Big Creek, 56 miles. The line was built in 1912 as a facility for the construction of hydro-electric developments in the Sierra Nevada mountains which are now complete. The area is served by highways and the railroad operates a stage line from Fresno to Big Creek which the Commission finds "adequate to take care of the passenger, freight and express requirements along the route served by the railroad."

TEXAS & NEW ORLEANS.—*Abandonment.*—This company and the Texas Midland have applied to the Interstate Commerce Commission for authority to abandon the line from Greenville, Tex., to Commerce, 14.2 miles.

WABASH.—*Equipment Trust Extension.*—The receivers have a plan whereunder the maturity date of this company's equipment trust certificates maturing in 1933, 1934 and 1935 will be extended for three years, interest payments to continue in the interim. The holders of the great bulk of these certificates, it is said, have already assembled to the plan.

WESTERN PACIFIC.—*Gets Notes.*—The Interstate Commerce Commission has authorized the Sacramento Northern to issue a note for $1,598,267 to be delivered to the Western Pacific in payment for a like amount of advances. The Tidewater Southern has likewise been authorized to issue its note to the Western Pacific for $508,278, in payment of advances.

Average Prices of Stocks and of Bonds

	June 20	Last week	Last year
Average price of 20 representative railway stocks..	40.89	40.63	13.99
Average price of 20 representative railway bonds..	68.60	68.94	51.61

Dividends Declared

Canada Southern.—$1.50, semi-annually, payable August 1 to holders of record June 30.

Joliet & Chicago.—Guaranteed, $1.75, quarterly, payable July 3 to holders of record June 23.

Mahoning Coal R. R.—Common, $6.25, quarterly, payable August 1 to holders of record July 17; Preferred, $1.25, semi-annually, payable July 1 to holders of record June 23.

New London Northern.—$2.25, quarterly, payable July 1 to holders of record June 15.

Pittsburgh & Lake Erie.—$1.25, payable August 1 to holders of record June 30.

Western New York & Pennsylvania.—5 Per Cent Preferred, 1¼ per cent, semi-annually; Semi-annual, $1.50, both payable July 3 to holders of record June 30.

Present Highway Policies a Menace to Real Estate Owners

There is a misconception of vast interest to realty owners toward the elimination of which little progress has as yet been made. That is the commonly held belief that real estate should furnish most of the tax revenues.

The comparatively recent imposition of new forms of taxation—income, gasoline, amusement, etc., and finally the proposed sales tax—are not so much based on a change of sentiment that it is inequitable for one form of wealth to carry the entire tax load as upon a growing realization that real estate simply cannot foot the entire bill.

Perhaps it is radical for a real estate man to question the advisability of spending—as we did in 1930—$1,479,186,647 for highways in the United States, exclusive of expenditures for city streets. I question it, for I believe that the chief beneficiaries of this liberal spending policy are the owners of intercity trucks and buses, and because I cannot lose sight of the fact that 58 cents out of every dollar to build these six-lane concrete truck highways is raised by property taxes at the expense of the home owner and renter. Does any real estate man seriously contend that an express highway raises the value of the property through which it passes? Sometimes it does quite the reverse.

From an article by Kenneth F. Duncan, Treas., Harmon National Real Estate Corp., in the New York Times.

Railway Officers

OPERATING

J. J. Moynihan, superintendent of transportation of the Erie, has been appointed to the newly-created position of superintendent of car service, with headquarters as before at Cleveland, Ohio, and **P. W. Johnston,** assistant superintendent of transportation at Cleveland, has been promoted to succeed Mr. Moynihan, the position of assistant superintendent of transportation being abolished. **D. J. Maley,** assistant superintendent of the Mahoning division, with headquarters at Youngstown, Ohio, has been promoted to superintendent of the Kent division, with headquarters at Marion, Ohio, to succeed **T. J. Murphy,** who has been transferred to the Mahoning

J. J. Moynihan

division at Youngstown. Mr. Murphy replaces **J. W. Graves,** who has been transferred to the Susquehanna, Delaware and Tioga divisions, with headquarters at Hornell, N. Y., succeeding **J. D. Rahaley,** who has been transferred.

Mr. Moynihan was born on March 29, 1875, in Cold Spring township, Cataraugus county, New York, and entered railway service in October, 1889, as a telegraph operator on the Erie. Four years later he went with the North Hudson County (N. J.) Railroad as a telegraph operator and ticket agent, returning to the Erie as a telegraph operator and assistant agent in January, 1895. Subsequently, Mr. Moynihan was advanced through the positions of passenger car distributor, freight car distributor, chief clerk and assistant to the superintendent of transportation. From May to December, 1917, he was assistant to the commissioner, Commission on Car Service, American Railway Association. From January, 1918, to February, 1920, he was with the car service division of the United States Railroad Administration, serving successively as office assistant, assistant in charge of closed car relocation, and manager of the Eastern railroads open top car pool. He returned to the Erie in March, 1920, as supervisor of transportation, being appointed superintendent of transportation in February, 1927, which

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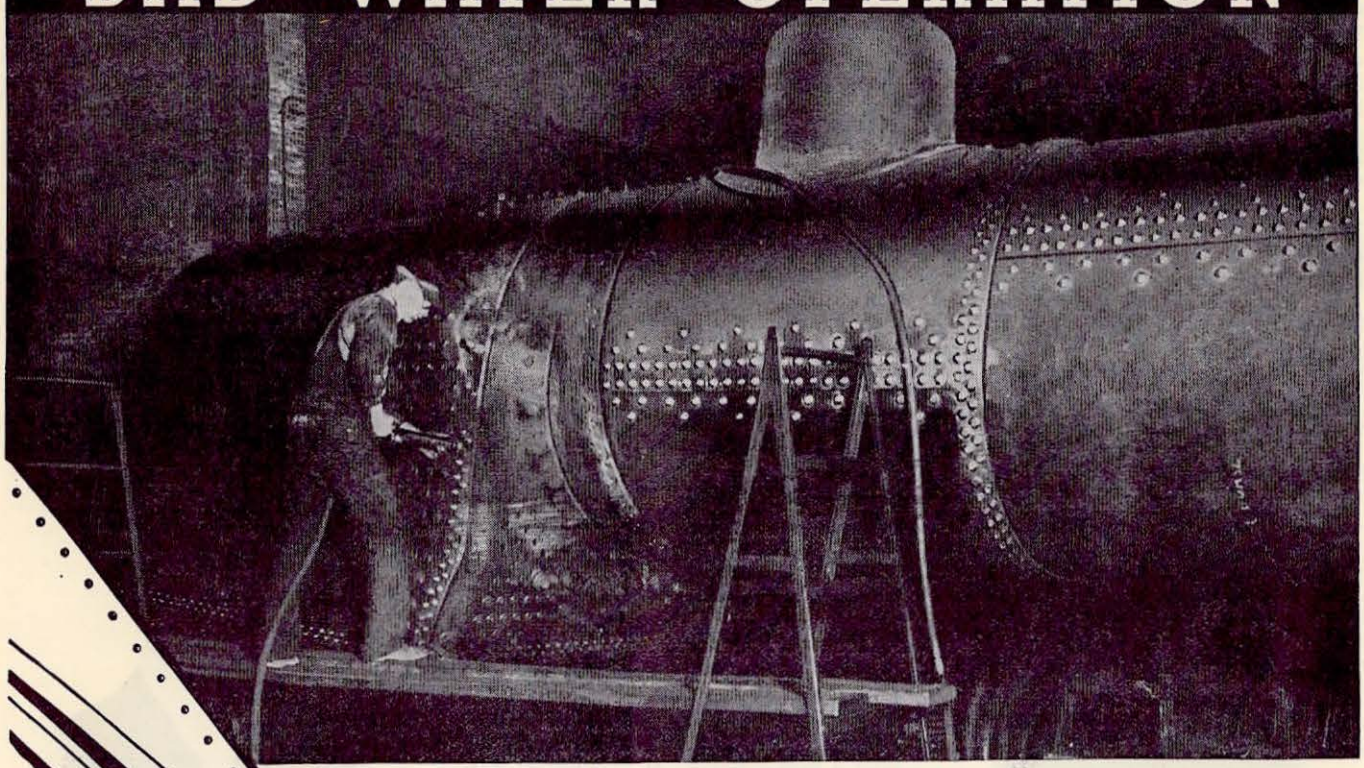
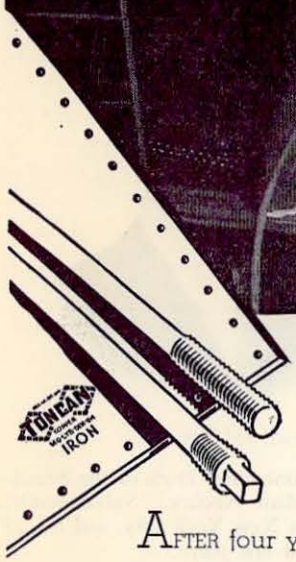
4 YEARS' SERVICE
120,000 MILES OF BAD WATER OPERATION





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position he was holding at the time of his recent appointment as superintendent of car service.

MOTOR TRANSPORT

T. B. Wilson, president of the Pacific Greyhound Corporation at San Francisco, Cal., has resigned to become vice-president and general manager of the Alaska Steamship Company, with headquarters at Seattle, Wash. **W. E. Travis,** chairman of the executive committee of the Pacific Greyhound Corporation and Pacific Greyhound Lines, has been elected also president, succeeding Mr. Wilson. **G. W. Sellers** has been appointed secretary and treasurer with headquarters at San Francisco succeeding **M. McKinstry** who has resigned. **F. W. Ackerman,** auditor, has been appointed also assistant to the president with headquarters at San Francisco.

Mr. Wilson, who has served as president of the Pacific Greyhound Corporation since May, 1930, entered the service of the Southern Pacific as a clerk in the passenger

T. B. Wilson

department, leaving the railway in 1912 to become an engineer in the United States War Department. He returned to the Southern Pacific as a clerk in 1915 and later was promoted to traveling auditor in the accounting department. During the World War he served as a captain in the United States army, again entering the service of the Southern Pacific in the accounting department after the conclusion of his military service. In 1922, Mr. Wilson was promoted to chief clerk to the superintendent of the Joaquin division. In February, 1924, he was promoted to supervisor of transportation, with headquarters at San Francisco, devoting a large part of his time to the study of motor coach and truck operation and competition. In May, 1927, he was appointed vice-president and manager of the Southern Pacific Motor Transport Company. When the Southern Pacific joined with the Greyhound, Yelloway and Pickwick Lines in June, 1929, and organized the Pacific Transportation Securities Company, Inc., Mr. Wilson was elected president and has since continued as executive head of that company and its successor, the Pacific Greyhound Corporation.

TRAFFIC

E. L. Cardle, assistant general freight agent on the Canadian Pacific at Chicago, has been promoted to general western freight agent with the same headquarters, to succeed **William A. Kittermaster,** who will retire on July 1.

W. L. McMorris, assistant passenger traffic manager of the Seaboard Air Line, at Norfolk, Va., has been transferred to Atlanta, Ga., where he will also undertake the duties heretofore performed by the general passenger agent at Atlanta, formerly held by the late **Fred Geissler.** This latter position has been abolished. Mr. McMorris will also continue to represent the Seaboard on the Conference Committee of the Southeastern Passenger Association.

MECHANICAL

Theodore A. Foque, general mechanical superintendent of the Minneapolis, St. Paul & Sault Ste. Marie and of the Duluth, South Shore & Atlantic, with headquarters at Minneapolis, Minn., at his own request will retire from active service on July 1, and **Beloit N. Lewis,** mechanical superintendent of the Soo Line, with headquarters at Minneapolis, has been placed in charge of the locomotive and car departments to succeed Mr. Foque.

OBITUARY

D. W. Longstreet, who retired on November 30, 1931, as vice-president in charge of traffic of the Illinois Central, died on June 18 at his home in Chicago after a week's illness. Mr. Longstreet was born on November 23, 1861, near Coffeeville, Miss., and was educated at Washington and Lee University and at the University of Mississippi. He entered railway service in 1887, as a clerk in the local freight office of the Illinois Central

D. W. Longstreet

at Holly Springs, Miss. After several years at this point and in various clerical positions in the local and general freight offices at New Orleans, La., Mr. Longstreet was appointed chief clerk in the general freight office at Louisville, Ky. In 1903 he was advanced to assistant general freight agent at the same point, being further promoted to general freight agent at Louisville in 1905. Two years later, Mr. Longstreet was transferred to Memphis, Tenn., where he remained until 1911, when he was sent to Chicago as freight traffic manager. Nine years later he was advanced to traffic manager at the same point, which position he was holding in 1928 when he was elected vice-president in charge of traffic, with headquarters still at Chicago, holding this position until his retirement.

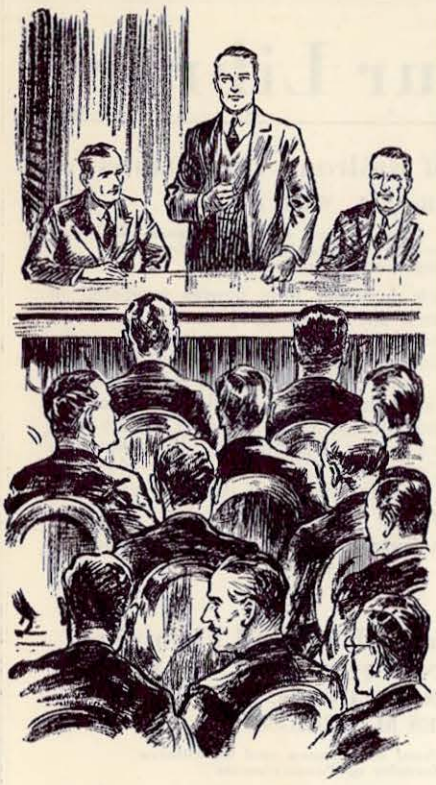
Bird M. Robinson Dies

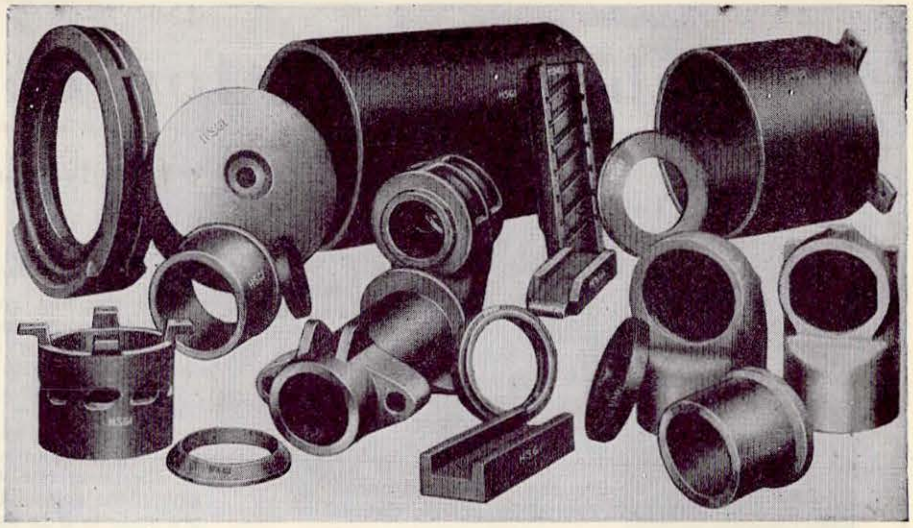
Bird M. Robinson, president of the American Short Line Railroad Association, died at Washington, D. C., on June 16. He was born in Greeneville, Tenn., on August 19, 1862, and was educated at the Greenville Academy. Mr. Robinson commenced his railroad career as a boilermaker's helper in the shops of the Texas & Pacific at Big Springs, Tex. He studied law in his father's office, was admitted to the Tennessee bar and for two years was assistant division counsel of the East Tennessee, Virginia & Georgia, following

Bird M. Robinson

which he became chief clerk of the Standing Rock Indian Agency. Subsequently, he removed to New York City, and for 25 years practiced law there.

In 1901, he became president of the Harriman & Northeastern, which was subsequently sold to the Cincinnati, New Orleans & Texas Pacific. In 1902, he organized the Tennessee Railway and constructed about 60 miles of road, continuing his services with that road until 1918. In the meantime, he also served as president of the Brunswick & Birmingham, now a part of the Atlantic Coast Line system. For four years he operated the Knoxville & Bristol, now a part of the Southern. He had also been president of the Hawkinsville & Florida Southern, the Mobile, Jackson & Kansas City, and the Gulf & Chicago. Upon accepting the presidency of the American Short Line Railroad Association, a successor to the Short Line Railroad Association of the Southeast, he succeeded in building that organization up to its present strength of more than three hundred members. Since 1918, Mr. Robinson has been a member of the executive committee of the Association of Railway Executives. He was also a director of the Railroad Credit Corporation.





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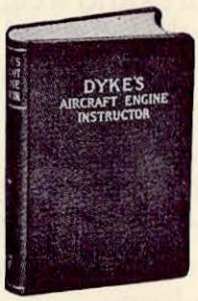

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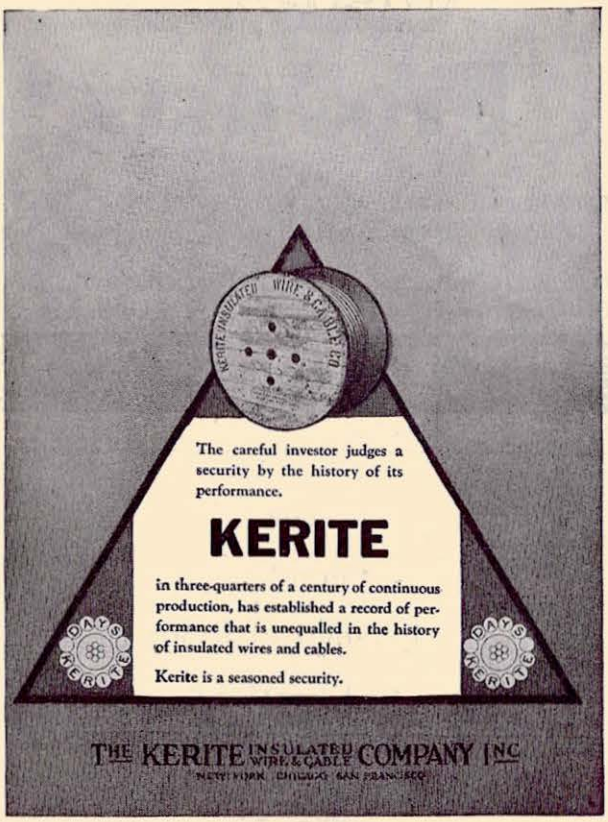
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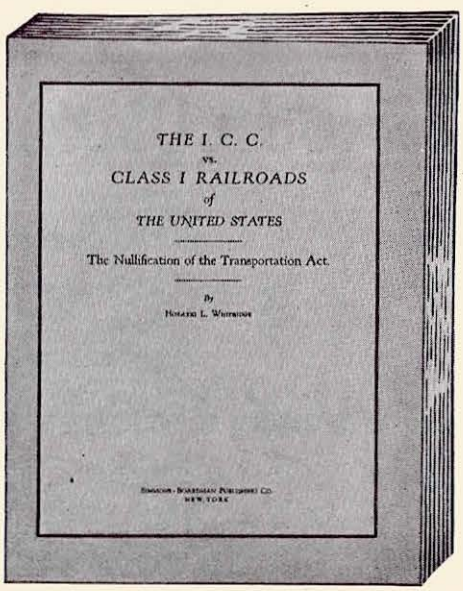

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